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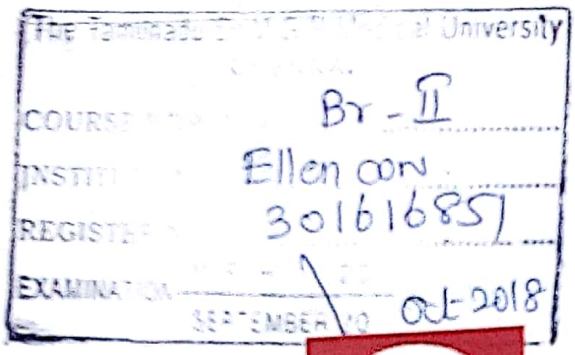

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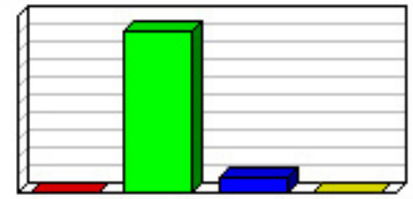

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BY

MRS.GEETHU.G

EXTERNAL INTERNAL

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OCTOBER 2018.

CERITIFIED THAT THIS IS THE BONAFIDE WORK OF

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SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENT
FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING.
TO THE TAMILNADU DR. MGR MEDICAL UNIVERSITY,
CHENNAI.

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ABSTRACT

A study on comparing different aspects of growth and development among pre-school children of anganwadies in selected urban and rural areas at Coimbatore, district was conducted as partial fulfilment of the requirement for the award of the degree of Master of Science in Nursing by 301616851 from Ellen College of Nursing under the Tamilnadu Dr. MGR medical University, Chennai.

The objectives of the study were

1) To assess the physical growth of pre-school children of urban and rural Anganwadies.

2)To assess the developmental milestones of pre-school children of rural and urban Anganwadies.

3)To compare the selected aspects of growth & development of pre-school children in rural and urban Anganwadies.

4)To associate the finding of growth and development with selected demographic variables of rural and urban preschool children.

The hypothesis formulated were,

H_{01}: There is a significant difference in different aspect of growth and development among preschool children of Anganwadies in selected urban and rural areas.

H_{02}: There is a significant association between different aspects of growth and development among preschool children of Anganwadies in urban and rural areas with selected demographic variables.

Literature review was done and organized under following headings;

1) Studies related to physical development.

2) Studies related to motor development.

3) Studies related to cognitive development.

4) Studies related to knowledge regarding parental role on growth and development of children.

The conceptual frame work adopted for the present study was based on the health belief model. The research design was comparative design. The setting for the study selected were Anganwadies of rural, Papampatti under Moppiripalayam Town Panchayat, Sulur, and Anganwadi of urban, Kuniyamuthur under Kuniyamuthur Municipality, Perur. Sample consisted of 90 preschool children, selected by using Stratified random sampling. The tool used for the study was structured questionnaire which comprised of two sections

Section I contained demographic variables.

Section II contained a observational checklist.

Assessment was done in two level, Achieved and Not achieved. The tool and content was validated by experts and their suggestions were incorporated. The split half method was used for determining the reliability of the tool. Pilot study was conducted and the study was found to be feasible.

Main study was conducted among 90 preschool children within a time period of 1 month. The collected data was analyzed and interpreted by using descriptive and inferential statistical methods.

CHAPTER -I

INTRODUCTION

"The children of today are the adults of tomorrow. They deserve to inherit a safer, fairer and healthier world. There is no task more important than safeguarding their environment"

(Dr. Groharlem Brundtland, Director General WHO (2003)

Health is a resource for life, not the object of living; it is a positive concept emphasizing social and personal resources, as well as physical capacities. All communities have highly variable, unique strengths and health needs; and is a common theme in most cultures. Health is multidimensional and is the condition of being sound in body, mind or spirit especially freedom from physical disease or pain.

Growth is an essential feature of life of a child that distinguishes him or her from an adult. The process of growth starts from the time of conception and continues until the child grows into a fully mature adult. Its starts from ovum, embryo, fetus before birth and neonate, infant, toddler, preschooler, schooler and adolescence after birth. The process of growth includes increase in number as well as the size of cells. Maximum increase in the number of cells occurs in the fetal life as evidenced by an increase in the DNA content of tissues. The cell size continues to enlarge till about 10-15 years of age manifesting as increase in the protein to DNA ratio.

The terms growth and development are not interchangeable because they represent two different factors of the dynamics of change, i.e. growth is quantitative while development is qualitative. It is important to study growth and development because of the following reasons: to know what is expected of a child at a given age in terms of physical and mental ability, to identify children who may not look apparently sick but who still have sub optimal health and malnutrition or are suffering from dormant illness. Remedial interventions

tried at this point of time are much more effective for prevention of disease and promotion of health. Early identification of handicaps, suitability of a baby for adoption through developmental examination, to assess the general health and nutrition status of the community and evaluation of social action or social actions for promoting health of the community the growth data before and after the remedial action such as mid-day meal or other preschool programs.

The importance of the growth and development includes to observe and asses each child in term of norms for specific levels of development. Knowledge of growth and development is essential to determine whether the child is healthy, mentally alert and well adjusted to environment or not. To teach caregivers, special focus to parents the procedure for observing their children's optimal growth and development, which aids them, to put effort to attain optimal development of their children helps the health care professionals to work effectively with children in health and sickness and to carryout guidance activities or training programs as well as school teachers to make the child to be grown in a matured manner.

Preschool children age groups are between 3-5 years. Preschoolers are emerging as creative persons who are preparing for their future role in society. The family continues to be a significant influence and support preschoolers continue to need physical affection and love from their parents. These needs may be less frequent or may take a different form from those of the toddler period.

The preschool age children have so many factors influencing the growth & development. These factors are changing the height, weight, head circumference, chest circumference, and other development. In psychosocial development preschools have mastered the tasks of the toddler period; they are ready to face the development endeavours of the preschool period. Preschools grow relatively slow; they become taller and thinner without gaining weight. Preschools gain the weight approximately 1.8 kg per year and height of the preschool is 109.5cm.Preschools motor development involves the walking, running, climbing and jumping are well established in 3 years of age and gradually the preschool starts riding a tricycle, walks on tiptoe, balancing on one foot for a few seconds and board jumps, skipping, skating. The child scribbles on the page and draw. The scribbling and drawing also help to develop the fine muscle skills and eye hand coordination.

During the cognitive development of preschool child has a very active imagination. He starts to believe in magic, and may fear by ghosts or monsters. He may also be afraid of the dark or being alone. When child plays, he likes pretending to be another character. Child also learns the idea of time and some basic colours. He understands what text is, and recognizes letters. He is able to retell familiar stories and follow complex directions. During this time, child learns his gender (boy or girl) .

Child growth and development are greatly depending upon family health. It depends upon family's physical and social environment which includes the lifestyle, culture, taboos, rituals, religious practices, traditional habits, child bearing and childrearing practices like son-complex, neglect to female child etc. Family size, family relationship and family stability also influence the child development. The socio-economic condition of family is a very important factor in child development. The physical and cognitive development of preschool children varies with the socio-economic status of family. Parent's education, profession, income, housing, urban and rural living, industrial life etc. are significant factors which influence the preschool child's growth and development. Poverty, ignorance, superstition, illiteracy especially mothers are also affect the children growth and development. The difference in growth and development between urban and rural, rich and poor can be observed in all age groups but particularly striking among children.

In developing countries, millions of young children suffer from nutritional deficiencies and frequent infection. There is now a large and increasing body of evidence to indicate that nutrition and health affect children's cognitive, motor and behavioural development both pre and postnatal. The impact of a biological insult depends on the stage of a child's development, as well as the severity and duration of the insult. However, because nutritional deficiencies and infections frequently occur together, the problems resulting from any one insult may be exacerbated by the presence of another and the effects can be cumulative.

The behavioural development of the child is a complex affair. The motor development, cognitive developments are coming under behavioural development. The work of ethnologists and sociologists show how quickly the child's behaviour conforms to models adult society offers them. For proper behaviour development, the child must be assured emotional and moral stability that is a home where he will bind of affection, regular discipline and parents who

accept him and provide him with models of balanced conduct. Many children will find themselves in ideals conditions. They consequently have trouble with behaviour, speech, sleep and appetite and these problems will have to be anticipated, diagnosed and treated.

The daily caloric requirement is range from 1300 to 1800 K caloric including 31gm/dl of protein, fat 20gm/dl and calcium 400mg/dl, iron 18mg/dl and water requirement 90 to 100 ml per kg. Nutritional deficiencies of proteins and calories, minerals, vitamins both quantitative and qualitative, considerably retard physical growth and development and also cause deficiency diseases, such as malnutrition, rickets etc. malnourished mothers produce low birth weight babies.

It is very important to monitor growth and development of children regularly. It indicates health and nutrition status of the child. It helps in identification of any deviation from normal growth and development and timely corrective measures can be taken at the family and health Centre level.

Need for the Study

Growth is the result of the concerted effect of a complex network of many regulatory factors with varying interactions. Each individual has a definite growth potential which may be modulated by these factors both in the prenatal period and in postnatal life. Optimal growth can only be achieved when all these factors operate in harmony. Growth refers to an increase in the physical size of the whole or any of its parts. Development refers to a progressive increase in skill and capacity to function.

Growth is an essential feature of the life of a child that distinguishes him or her form an adult. It is important to study growth and development because to know what is expected of child at a given age, in terms of physical and mental ability. In this age group the child beginning independent development. So the parent's starts loose observation because of increasing in the age or other child will come identify any deviations potential problems, and take appropriate strategies and remedial measure.

The importance of the first 3 to 5 years of life of a child for its growth and development is well known. Any adverse influences operating on children during this period

(e.g. malnutrition and infection) may result in severe limitations in their development. The concept of vulnerability calls for preventive care and special actions to meet the biological and psychological needs inherent in the process of growth and development. As for the UNICEF reports, 167 million preschoolers are underweight of which half are from South Asia. Nationwide survey conducted in India indication that more than half of children were underweight and stunted and one sixth was exclusively wasted indicats acute under nutrition.

Preschool has a steady growth in some families the family members giving more carbohydrate and fatty foods supply and it may lead to overweight and in poor families they are not taking adequate nutrition it affects to the physical growth of the child. If the parents are not proving the toys, papers. When the parents in unable to communicate with the child and not allowing their child to express their word and not teaching the new word to their children leads to impaired cognitive development. The parents in the home who cannot make their child to say some words and ask them to repeat it affects the language development of the child.

During 1996-2004, more than 26 percent of the world children under the age of 5years were underweight for their age. The proportion ranged from 1.0 percent in children in developed countries to 27 percent in developing countries. In India the National Family Health Survey of the nutritional status of young children. Both chronic and acute under nutrition were found to be high in all the seven states for which reports have so far been received, namely, Haryana, Maharashtra, Orissa, Tamil Nadu, Utter Pradesh and Goa. At present 65 per cent children less than 5 years age are underweight. This includes 47 percent moderate to severe cases,18 percent severe malnutrition ,of these,16 percent have moderate to severe wasting and 46 percent moderate to severe stunting.

A cross-sectional study was conducted in Karachi to know the Anthropometrics indices of middle socio-economic class school children in Karachi compared with NCHS (National Centre for Health Statistics) standards—a pilot study. The study found that height and weight of these children is below the NCHS centile for height and weight. Children plotting near the P95 NCHS, indicates that obesity may be a serious concern in our population. This pilot study indicates the need for development of centile charts for Pakistani paediatric population.

On analyzing the above studies conducted in India, from personal and clinical experience of the researcher, it was felt that the preschool children need special attention to monitor their growth and development. Also investigator aim is to help children to optimize quality of life through assessing their different aspects of growth and development, which form base for conducting the present study. Further its helps to identify any deviations or potential problem, take appropriate strategies and remedial measures.

Statement of Problem

"A study on comparing different aspects of growth and development among pre-school children of anganwadies in selected urban and rural area at Coimbatore district "

Objectives

1. To assess the physical growth of pre-school children of urban and rural Anganwadies.
2. To assess the developmental milestones of pre-school children of rural and urban Anganwadies.
3. To compare the selected aspects of growth & development of pre-school children in rural and urban Anganwadies.
4. To associate the finding of growth and development with selected demographic variables of rural and urban preschool children.

Hypotheses

H1 :There is a significant difference in different aspect of growth and development among preschool children of Anganwadies selected urban and rural areas.

H2 :There is a significant association between different aspects of growth and development among preschool children of Anganwadies in urban and rural areas with selected demographic variables.

Operational Definitions

1. **Comparing :-** It refers to examine or look for the difference between two or more thing

2. **Growth**:- It refers to increase or change of the physical characteristics taking place in the body such as height, weight, head circumference, chest circumference and mid arm-circumference of the preschooler.

3. **Development**:- It refers to an increase in the skills and capacity to function towards cognitive skills such as intellectual ability to learn, remember and recognizing, solve the problems, and motor skills such as fine and gross motor development of the preschooler.

4. **Preschool Children**:- it refers to children who are no long babies but are not yet old enough go to school.

5. **Anganwadies Centre**:- It is a centre where supplementary nutrition, health check up, medical referral service, and non formal education are provided in the children age group of 3-5 years
6. **Urban**:-It refers to human settlement with high population density and infrastructure of built environment.
7. **Rural:-** Rural areas or countryside is geographical area that is located outside towns and cities.

Assumptions

The study assumes that,

1. Growth and development may be affected in rural preschool children due to poor hygiene, poor nutritional supplements, lack of experience, lack of trained personnel in Anganwadies and illiterate parents.

2. Preschooler of Anganwadies centre in urban area will maintains better health status than preschooler of rural Anganwadies centre.

Conceptual Framework

A concept is an abstract idea or mental image of phenomena or reality. Conceptualization is a process of framing ideas, which utilized and forms conceptual framework for development of research design. A framework is a basic structure or outline of abstract ideas or images that represent reality (Kozier-1987).

Conceptual framework is a theoretical approach to the study of problems that are significantly based and emphasis the selection, arrangement and classification of its concepts. The conceptual framework for this study is based on the review of literature and clinical experience of the investigator. The present study is particularly intended to assess the growth and development of the preschool children in turns of their demographic data, physical examination and developmental assessment. The investigator identified that the health belief model was suitable for this study.

Health belief model by Becker 1974 has become popular conceptual framework in nursing especially in studies focusing on health assessment, promotion of health and prevention of diseases. It is based on motivational theory.

The three major components of Health belief model are

1. Individual perception
2. Modifying factors
3. Variables affecting likelihood action

1. **Individual Perception:**

An individual's perception of the levels of susceptibility and seriousness provide the force to act. It may require a cue of action for the desired behaviour to occur. These cues may

be internal like repeated history of illness of the child or delay in development or external as advice from the health personal of exposure to mass campaign.

The individual's perception in this study is influence of perceived behaviour of the preschool children, the preschool children cannot understand the prevention and change of behaviour so here the parents especially mothers make a decision about the health care and health behaviours regarding their children, the physical examination, periodic health checkups helps to understand the deviation from normal health. The mother will take care of their children and perceive the benefits of health.

2. Modifying Factors

Modifying factors are demographic variables and socio psychologic, which directly and indirectly influence on the health status of the preschool children. These include demographic variables of the child such as age, gender, and immunization status and birth order. The socio psychological variables are parent's education, occupation, income, religion of the family and dietary pattern. These factors can be modified if the health status of the children is not adequate by means of likelihood of action.

3. Likelihood of Action

The likelihood of a person's taking recommended preventive health action depends on the perceived benefits of the action minus the perceived barriers to the action. This includes the individual's action to achieve the maximum health status. Based on the health perception, the parents will be taking action to promote health and prevention of diseases of preschool children. The parents will take preventive actions to enhance the physical and growth and development of their children.

This model focuses on the physical growth and development of preschool children in the Anganwadies. Illness or the delay in achievement of physical growth and development of preschool children is perceived to be serious and barriers. Parents are more likely to engage in their children's preventive health behaviour. It is very important for paediatric

health nurse to assess or identify the barriers, which make the parents to take action for promoting their children health.

The health belief model is directed more toward health protecting behaviour than the health promoting behaviour. The periodic health appraisal by the medical officer or health worker monitoring of anthropometric measurements etc. will help to protect the children health status which is deviating from the normal is explained in the following conceptual frame work.

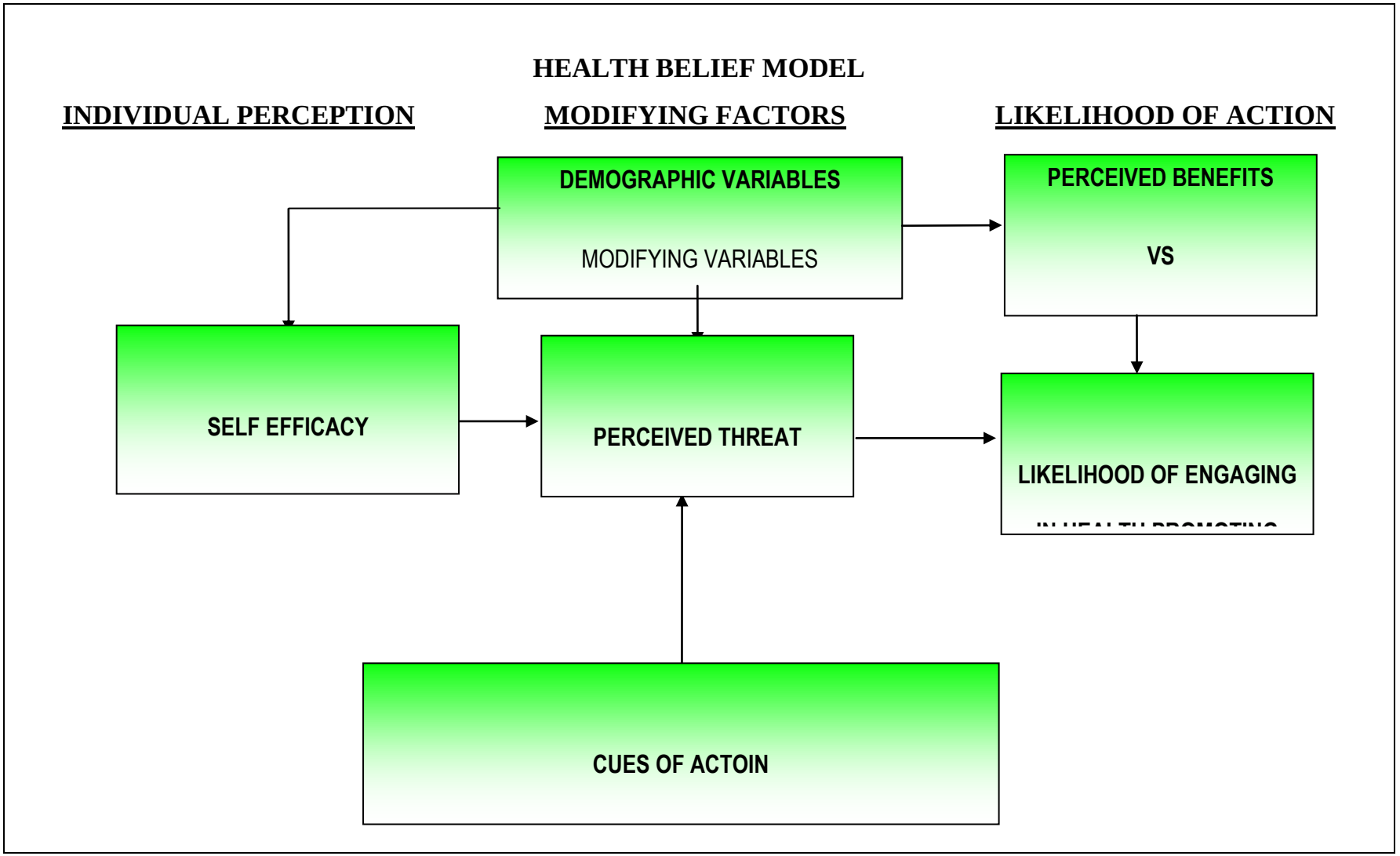

Figure 1.1: Conceptual Frame Work Based On Health Belief Model.

CHAPTER -II

REVIEW OF LITERATURE

The review of literature is an extensive, systematic selection of potential sources of previous work, acquainted fact –findings after securitizations and location of reference to the problem under study. It is helpful in understanding and developing insight in to the selected problem under study, to develop a conceptual framework, to lay the foundation for a study and also to inspire new ideas. The literature review leads the reader through development of knowledge about chosen topic up to the present time to indicate why this current research project was necessary.

In order to accomplish the goal of the present study, the review of literature has been organized under the following headings.

1. Literature related to physical development.
2. Literature related to motor development.
3. Literature related to cognitive development.
4. Literature related to knowledge regarding parental role on growth and development of children.

1. Literature Related to Physical Development.

A cross sectional study was carried out in children aged three to six years attending 34 anganwadi centres of a coastal district of Karnataka. Anthropometric measurements like height, weight and mid arm circumference was measured using standard methods. Malnutrition was assessed based on WHO z scores. 25.5% of the children attending urban anganwadies were underweight, 10% severely underweight, 15.5% stunted, 2.5% severely stunted, 24% wasted and 8.5% severely wasted. 18.5% of children attending rural anganwadis were underweight, 6.8% severely underweight, 11.8% stunted, 3.2% severely stunted, 15.2% wasted and 4.5% were severely wasted. The prevalence of wasting was significantly higher

(p=0.006) in children attending urban anganwadi centres compared to rural centres.Urban anganwadis had a higher prevalence of underweight, stunting andwasting. Underweight and stunting was higher in females compared to males whereas wasting was found almost equally in both the genders.[16]

A cross-sectional study was done to develop age specific norms for developmental milestones using Vineland Adaptive Behaviour Scales for apparently healthy children from 2 to 5 years from urban Bangalore, India, and to examine its association with anthropometric measures. Mothers (or caregivers) of 412 children participated in the study. Age-specific norms using inferential method and adaptive levels for all domains and sub domains were derived. Low adaptive level, also called delayed developmental milestone, was observed in 2.3% of the children, specifically 2.7% in motor and daily living skills and 2.4% in communication skills. When these children were assessed on the existing U.S. norms, there was a significant overestimation of delayed development in socialization and motor skills, whereas delay in communication and daily living skills were underestimated (all $p < .01$). Multiple linear regression revealed that stunted and underweight children had significantly lower developmental scores for communication and motor skills compared with normal children (β coefficient ranges from 2.6-5.3; all $p < .01$). In the absence of Indian normative data for VABS-II in preschool children, the prevalence of developmental delay could either be under- or overestimated using Western norms.

An experimental study was conducted in Mexico to assess the effect of micronutrient deficiencies on child growth on preschool children. The study found that several controlled, community based intervention trials that have included animal source foods, either together with additional micronutrients supplements or with other supplemental food sources, have demonstrated positive growth responses among children. And also the contribution of the zinc deficiency for the growth faltering among children Three trials study was used and an suggested that animal source food alone (skim milk powder) have a positive growth response.

A cross-sectional study was conducted in Baylor College of Medicine Houston, Texas. In this study physical activity is a component of energy balance and is promoted in children and adolescents as a lifelong positive health behaviour understanding the potential behavioural determinants necessitates understanding in the influences by three fundamental areas

they are 1.Physiological 2.Environmental 3.Psychological and social. The result says that these three aspects interact in a multi dimensional way to influence physical activity in youth.

A comparative study was conducted in Netherlands to assess the prevalence of overweight and obesity in children living in the Netherland and compare the finding with the third and fourth national growth studies carried out in 1980 and 1997. The children between the age group 4-16 years totally 90071 students collected from community health services and the result came on average 14.5% of the boy and 17.55 of girls were overweight. The prevalence of the overweight and obesity in the Netherland is still rising and at an even faster rate than before. There is an urgent need for preschool intervention programs.

A cross-sectional study conducted for children 0-6 yrs. of age from eight different population groups in Africa and Asia was examined. Clinical assessment defined 8750 children as being well nourished and 194 as having marasmus. Height, weight, mid arm circumference, and triceps skin fold thickness were measured; the same observer did the latter two measurements and the clinical assessment. Based on data from normal children, local growth curves were computed for each group. Each child's growth was expressed in standard deviation scores of his own group. On the basis of the results of a discriminated analysis, all variables were ranked by their decreasing power to discriminate between normal and marasmic children. For 83% of the children one measurement is sufficient to classify them definitely. They came to conclusion that there are nutritional deficiencies in the preschool children and also there is the necessary of health worker to educate the nutritional problems of the preschooler.

The comparative study was conducted on the weight-for-age status of each child is compared with his weight-for-height status. Children with a weight-for-height status of less than 89% and who were still failing to gain weight were considered 'at risk' and in need of referral. Of 28 such children, only four were referred. The growth curves of five wasted children who were not referred showed acute weight loss. It is suggested that community health nurses may experience problems in interpreting the trend of a child's growth curve, possibly because the information is inadequate or because they fail to interpret the given information correctly. Alternatively, community health nurses may have other reasons for non-referral and these are also discussed. The study also considers whether incorporating a weight-for-height assessment into the clinic routine would increase the efficiency of nutritional intervention. However, there

appears to be no obvious advantage if children's ages are known and the majority of children are not severely malnourished. The emphasis should be on training, not on new techniques

A nutritional survey was conducted in Lagaip to examining 1,739 children's under five years. Results showed that the pattern of their growth was similar to that reported in other highland populations. The high proportion (37%) of the children classified as malnourished results from stunting, not wasting. Most of the children classified as wasted were less than 2 years old. Significant associations were found between reported morbidity and nutritional status when the latter was assessed by weight related indices. Using the weight for age measurements, 37% of the study children are classified as malnourished. The most prevalent form of malnutrition is stunting (deficit in length for age). Only 3% of the samples are wasted (deficit in weight for length), with a majority, 81%, under 2 years old. The results suggested that the proportion of children neither wasted nor stunted falls steadily with age to 39% in the 5th year of life. Stunting, unlike wasting, is not amenable to nutritional intervention. Preventive programs to increase energy and protein intake should be aimed at children 4 to 15 months old, a critical age range when prevention is important.

An experimental study was conducted to identify and measure the effects of family migration from rural-to-urban, Merida city in Yucatan, Mexico. Exposure of immigrants to new environmental and sociocultural conditions can generate biological responses, including changes in physical growth pattern at early age. Investigator identify and measure on growth in 4- to 6-year-old children, measuring weight, height, sitting height, and calculated arm muscle and fat areas of 445 children: 228 natives (116 females) and 217 immigrants (118 females) and collecting family social and demographic data. Statistical analysis focused on determining differences in growth, socioeconomic, and biological variables by migratory condition and generating multiple regression models for each growth measurement. No univariate statistical differences ($P > 0.05$, Student's t-test) were observed in growth between studied children. Multiple regression analyses showed age, sex, mother's height, birth order, birth weight, family income; zone of residence, diet, and febrile episodes had an effect on growth. Neither the migration variable used above nor any other definition of migrant had a significant effect on growth. The lack of differences in growth between immigrant and native children is probably due to similarity in socioeconomic conditions of their families.

A comparative study was done by University of Tuebingen, Germany on investigates height and weight differences between North and South Korea in 2002. For socioeconomic reasons, pre-school children raised in the developing country of North Korea are up to 13 cm shorter and up to 7 kg lighter than children who were brought up in South Korea--an OECD member. North Korean women were also found to weigh up to 9 kg less than their Southern counterparts.

An observational study was conducted to determine morphological diversification of preschools children aged 3-6 years with proper body height in Poznan preschool. It included 165 children, therein 93 girls and 72 boys, aged 3-6 years. To short stature group of children entered the ones with body height below 10 percentiles. The analysis was performed for 2 groups of children--with proper body height and with short stature girls and boys. It was found that body height has an influence on motor abilities. Children with proper body height have higher motor fitness level in relation to short stature children (both girls and boys). Short stature girls have worse motor fitness in all trials. Short stature boys are much better in one speed trial.

An observational study was conducted to assess associations between multiple potential predictors and change in child body mass index. Parents provided information on potential predictors of childhood overweight across six domains i.e. children's diet, children's activity level, family composition, socio-demographic factors, prenatal factors and parental adiposity. Measures were repeated three years later in 2000/1. BMI was transformed to standardized (z) scores using the US 2000 Growth Chart data and children were classified as non-overweight or overweight according to international cut-points. Regression analyses, including baseline body mass index z-score as a covariate, assessed the contribution of each potential predictor to change in BMI z-score, development of overweight and spontaneous resolution of overweight in 1,373 children. Inverse associations were noted for the presence of siblings and rural residence (all $p<0.05$). Predictors of categorical change (development and resolution of overweight) were less clearly identified, apart from an association between maternal body mass index and overweight development ($p=0.02$). Multivariable models suggested individual determinants have a cumulative effect on body mass index change. Strong short-term tracking of body mass index makes it difficult to identify predictors of change. Nonetheless, putative determinants across all domains assessed were independently associated

with adiposity change. Multi-faceted solutions are likely to be required to successfully deal with the complexities of childhood overweight.

A comparative study of the growth of South-East Asian children, comparison between south-west Sydney and overseas. The height and weight of two groups of South-East Asian children between the ages of 1 and 10 years living in south-west Sydney were compared to determine the effects of environment on growth and development. One group of these children was born overseas and the other in Australia. The children who were born in Australia were found to be significantly taller (1–2%) and heavier (10%) than those born overseas. This would suggest that ecological factors including health and nutrition contribute to this differences.

An observational study was described physical growth in terms of height, weight, sitting height, skin fold thickness at triceps and upper arm circumference of Tibetans born and raised at three Tibetan refugee settlements (3,521; 970; and 800 m) from the view point of the hypothesis that growth is retarded at high altitude. Samples consist of individuals between the ages of 2 and 40 years. Tibetans at high altitude in India show a growth pattern similar to that previously observed among Tibetans in Tibet. Tibetans at high altitude are taller and heavier compared to Andean highlanders. The general trends show that Tibetan children and adults of both sexes at low altitude in India are advanced in terms of height, weight, skin fold thickness at triceps and upper arm circumference compared to Tibetans at high altitude. Trunk length (sitting height) is similar at the two altitudes but relative sitting height is greater at high altitude. Greater relative sitting height and lesser leg length at high altitude than at low altitudes is discussed in terms of effect of altitude, temperature, and nutritional status.

A descriptive study was conducted at centre for Health Promotion and Disease Prevention, University of North Carolina, USA. The purpose of this article is to present these physical activity best-practice guidelines and provide data on how these guidelines compare to current practice in a large sample (N = 96) of child care centres in North Carolina. These best-practice guidelines include recommendations for 8 unique components of the child care environment, including active opportunities, fixed play environment, portable play environment, sedentary opportunities, sedentary environment, staff behaviour, staff training/education, and physical activity policies. The results showed that only a few of the best-practice guidelines were achieved by a majority of the 96 childcare centres that participated in this study. The study

suggests that establishing comprehensive guidelines for physical activity at childcare could result in higher activity levels and healthier children, and also more research is needed.

A community based cross- sectional study was conducted at a rural community of West Bengal, India on anthropometric failure, a new approach to measure under nutrition. This study aims at assessing the prevalence of under nutrition among preschool children. Anthropometric measurement of 256 children was done as per WHO guidelines along with collection of sociocultural and healthcare related information. Z-score was calculated and the prevalence of stunting, underweight, and wasting was 46.9%, 52.3% and 15.2% respectively was found. Composite, index of anthropometric failure was 65.6%. Anthropometric failure was significantly associated with low income, more number of siblings, nuclear family, short duration of exclusive breastfeeding, later initiation of complementary feeding, immunization status, mothers' BMI, episodes of diarrhoea and acute respiratory infection. Multipronged intervention is to be initiated to address this staggering problem of under nutrition.

A comparative study was conducted on body mass index in Saudi Arabian children and adolescents comparison with international standards. The weight and length/height were measured and recorded following the WHO recommended procedures using the same equipment, which were subjected to both calibration and intra/inter observer variations. The results shown that from survey of 11 874 eligible households yielded 35 275 full-term and healthy children and adolescents who were subjected to anthropometric measurements. Four BMI curves were produced, from birth to 36 months and 2 to 19 years for girls and boys. The 3rd, 5th, 10th, 25th, 50th, 75th, 85th, 90th, 95th, and 97th percentiles were produced and compared with the WHO and BMI charts. In the higher percentiles, the Saudi children differed from Western counterparts, indicating that Saudi children have equal or higher BMIs. Conclusion: The BMI curves reflect statistically representative BMI values for Saudi Arabian children and adolescents.

Department of paediatrics, King Saud University, Saudi Arabia, conducted a comparative study. Study has provided a detailed description of regional variations of growth within the various regions of Saudi Arabia to demonstrate differences in growth of children and adolescents. Subjects of healthy children from birth to 18 years of age were selected and body measurements such as length, stature, weight, head circumference and calculation of the BMI

were performed according to standard recommendations. The results shown that significant differences in growth between regions that varied according to age, gender, growth parameter and region. The highest variation was found between children of the south-western region and those of the other two regions. The study concludes that regional variations in growth need to be taken into consideration when assessing the growth of Saudi children

A comparative study was conducted by department of Paediatrics, to assess the anthropometrical parameters of the four-year-old children in the urban and rural Slavonia. The samples of 342 children, aged 4 years, from Slavonski Brod and the nearby villages was taken in 2005. The body height, weight, and mid-arm circumferences were measured and compared with the historical control data from the study performed in 1985 in the same area using the same methods. The data were compared according to sex and the place of residence. Results shows that there were no significant differences in the body height, weight, mid-arm circumference and body mass index between the urban and rural children in 2005. The Children in 2005 were significantly shorter and had lower weight compared with their counterparts in 1985. In 2005 there was no significant difference in the body mass index (kg/m2) between girls and boys in total. Differences between the urban and rural parameters have disappeared over the last 20 years, which could be assigned to life-style changes in the rural areas.

A prospective study was conducted on assessment of the effectiveness of growth monitoring and promotion practices in the Lusaka district of Zambia. They evaluated the effectiveness of the growth monitoring and promotion (GMP) program in Zambia. A qualitative data on knowledge, attitudes, and practices of GMP were collected from health facility managers (n=6), health workers (n=35), and mothers whose children attended all follow-up visits (n=27). The results are anthropometric status of children in all groups deteriorated, with children at community posts having the worst outcomes (change in weight-for-age Z-score -0.8+/-0.7), followed by trained (-0.5+/-0.6) and untrained (-0.3+/-0.47; $P<0.05$) health facilities. A similar trend was seen for weight for length. The overall dropout rate was 74.1%. Weight-for-age Z-scores were higher at 1- and 2-mo follow-up visits for children who did not complete the study at trained health facilities and community posts compared with those who remained in the study. Mothers/caregivers identified GMP as important in attending the under-five clinic, associated their child's weight with overall health status, and expressed a willingness to comply with health

workers' advice. However, health care providers were poorly motivated, inadequately supervised, and demonstrated poor practices. The study concludes that the GMP program in Lusaka is functioning sub optimally, even in facilities with trained staff is essential.

A qualitative study was conducted on physical activity, eating and drinking experiences of children at Wellington Public School. The study was designed and implemented to inform school programs and policies with a goal of fostering a supportive and healthy environment at the school. Methods: The study-involved use of focus groups, drawings and photo voice with 37 students from Kindergarten to Year 6 to determine problems, underlying causes and possible student-led interventions to enhance the school physical activity and nutritional environment. Results: Students considered play as related to fun games with friends. Sport was associated with structured, competitive types of physical activity. Infant's class students preferred play, while primary students reported a preference for semi-structured and structured activities. Suggestions to improve school playing areas mirrored these preferences and the children suggested strategies for increasing fruit, vegetable and water consumption during the school day. Conclusion: The students were keen to explore ways to increase physical activity opportunities and develop a supportive nutritional environment at school. Simple, easy to implement suggestions were among the outcomes of the study, reinforcing the importance of including students' views in healthy school program and policy development.

A descriptive study was conducted on anthropometric reference data for children and adults. This report presents national anthropometric reference data for the U.S. A population aged 3 months to 3yr older in 1988-1994. A total of 31,241 persons were examined, the anthropometric measurements taken included weight, height, recumbent length, circumferences, and skin fold thickness. Body mass index values were computed from measured height and weight values. The results found that weighted population means, standard errors of the means, and selected percentiles of body measurement values are important. Because measurements varied by sex and results are reported by these subgroups. The study concludes that data add to the knowledge about trends in child growth and development and are useful in monitoring overweight and obesity in the U.S. population.

A comparative study was conducted to compare anthropometric parameters and overweight prevalence in third and fourth generation in preschool children of Japan in Lima,

Peru. A total of 337 measurements of height and weight from 284 children, 3 to 5years of age, were taken. The data of each parameter were classified into three ethnic groups according to their parents' surnames, Japanese descendant children (n = 104), Japanese-Peruvian descendant (n = 93), one parent with a Japanese surname and one with anon-Japanese surname; and Peruvian descendant (n = 140), both parents with on-Japanese surnames. The National Centre for Health Statistics (NCHS)2000 growth charts were used as reference values to obtain centiles, Z scores, and body mass index. In boys, the three groups differed significantly in height, weight, body mass index, Z scores, and overweight prevalence. Peruvian descendant boys were taller and heavier than Japanese-Peruvian and Japanese descendants. Moreover, Japanese-Peruvian descendant boys were taller and heavier than Japanese descendant boys. In girls, there were no significant differences in height and weight and in overweight prevalence among the three ethnic groups. Japanese descendants in Peru have height, weight and body mass index values similar to those of Japanese children in Japan but lesser than Peruvian children. These findings may be related to differences in ethnic background.

A descriptive study was conducted on anthropometric growth pattern in Ethiopian infants and children. At the population level international growth references have been widely used as useful tools to assess a number of situations, i.e. to predict local and general emergencies related to food and nutrition; to assess the equity of distribution of economic resources within and between communities. This paper focuses on the re-evaluation of the main aerometric indexes, i.e.: height for age, weight for height and BMI in a sample of infant and children aged between 24 and 120 months from urban and rural Ethiopia. Previous evaluation based on the NCHS-1977 growth references led to striking results in terms of growth retardation while a recent evaluation based on NCHS-2000 (NHANES) growth references gave better but contradictory pictures. As consequence, concerns on the adequacy of international references use in infant and children growth assessment in the developing countries seem to be widely justified while local or national well built growth references should offer the possibility for a most realistic evaluation.

An Observation study was conducted for assessing children's physical activity in their homes. The study describes the development and pilot testing of the Observation System for Recording Physical Activity in Children-Home version. This recording system was

developed to document physical activity and related physical and social contexts while children are at home. An analysis of inters observer agreement and a description of children's physical activity in various settings are presented. The system, which was shown to be reliable, provides a direct observation tool for researchers who are interested in assessing and intervening in physical activity in the home environment.

2. Literature Related to Motor Development.

A comparative study was conducted in Washington University, USA, compared the effect of sensory and motor condition and unstructured activity condition on the motor development of preschool children immediately following 20 weeks intervention. The sample included was 31 children enrolled into two preschool programs, in one group which experienced a sensory motor condition 16 students and a group which experienced an unstructured activities condition in this 15 students. The results are found that the motor development of both groups changed significantly over time but there were no difference in between groups.

A comparative study conducted by WHO to review the method for generating window of achievement for six gross motor development mile stone and to compare the actual windows with commonly used motor development skills. In this trained field workers assessed the 816 children at scheduled time as monthly in one year and bimonthly in two year and also caretakers also recorded ages of achievement independently. About 90% of children achieved five of the milestone following a common sequence and 4.3% did not exhibit hands and knees crawling. The six windows have age overlap but vary in width that is narrowest is sitting without support 5.4 months and widest are walking alone 9.4 months and standing a line 10.0 months. The 95% confidence interval widths varied among milestones between 0.2and 0.4 months for the 1^{st} percentile and 0.5and 1.0 month for 99^{th}. They recommended that for the descriptive comparisons among populations, to signal the need for appropriate screening when the individual children appear to be late in achieving the milestones, and to raise awareness about the importance of overall development in child health.

The comparative study investigated regarding the gross motor development of children at two day care centres, one with a movement-oriented physical education program and the other with an unstructured free play period. Also studied were the biological factors of age and sex. A total of 146 children were tested during a 3-year period. During the last two years, children at two other centres were tested as a control group. Subjects were given the Test of Gross Motor Development. A motor quotient indicating level of motor ability was derived from locomotors and objects control subtests. Findings suggested that: (1) preschool-age children benefit from physical education regardless of teaching styles or curriculum used; (2) the movement-oriented approach produces better results on a motor development test and is an appropriate method of teaching preschool-age children and (3) there are sex-specific differences in motor skill development at a very early age in both object control and locomotors skills.

An experimental study was done to investigate the effects of a creative movement program on gross motor skills of preschool children. 60 children between the ages of three to five were drawn from the population of a preschool in Taichung, Taiwan. The children enrolled in the experimental group participated in a creative movement program twice a week for 30 minutes each time. Meanwhile, the children enrolled in the control group participated in unstructured free play. Data were collected from the administration of a pre-test and post-tests to both groups to investigate the effects of a creative movement program on the scores of the Peabody Developmental Motor Scales-Second Edition. Analysis of covariance was utilized to test four questions to investigate the effects of the creative movement program on gross motor skills. Results of this study showed that students participating in the creative movement program in gross motor skills (p .05) and stationary ($p > .05$) scores on the Peabody Developmental Motor Scales-Second test between two groups.

An experimental study was to examine the relationship between motor skill performance and physical activity (PA) in preschool children. Participants were 80 three and 118 four-year-old children. The Children's Activity and Movement in Preschool Study, Motor Skill protocol was used to assess process characteristics of six loco motor and six object control skills; scores were categorized as loco motor, object control, and total. The act graph accelerometer was used to measure PA; data were expressed as percent of time spent in sedentary, light, moderate-to-vigorous PA (MVPA), and vigorous PA (VPA). Children in the highest tertile for total score

spent significantly more time in MVPA (13.4% vs. 12.8% vs. 11.4%) and VPA (5% vs. 4.6% vs. 3.8%) than children in middle and lowest tertiles. Children in the highest tertile of loco motor scores spent significantly less time in sedentary activity than children in other tertiles and significantly more time in MVPA (13.4% vs. 11.6%) and VPA (4.9% vs. 3.8%) than children in the lowest tertile. There were no differences among tertiles for object control scores. Children with poorer motor skill performance were less active than children with better-developed motor skills. This relationship between motor skill performance and PA could be important to the health of children, particularly in obesity prevention. Clinicians should work with parents to monitor motor skills and to encourage children to engage in activities that promote motor skill performance.

A study was conducted at child obesity research centre, University of Wollongong, Australia. The objective of this study was to systematically review evidence from controlled trials on the efficacy of motor development interventions in young children. The results were show that the seventeen studies met the inclusion criteria. More than half (65%) were controlled trials and delivered at childcare settings or schools (65%). Three studies had high methodological quality. Studies were approximately 12 weeks in duration and delivered by teachers, researchers, and students. Parents were involved in only 3 studies. Nearly 60% of the studies reported statistically significant improvements at follow-up. Three studies aligned with the CONSORT and TREND statements. The study concludes that, review highlights the limited quantity and quality of interventions to improve motor development in young children.

A cohort study was conducted on global developmental delay and its relationship to cognitive skills in Canada. This study determined the cognitive skills of a cohort of young children with global developmental delay. A retrospective chart review of all children diagnosed with global developmental delay within a single developmental clinic was carried out. Scores on fine motor, and receptive language (Reynell Developmental Language Scales or Clinical Evaluation of Language Fundamentals -Preschool 2) testing, and cognitive performance (Wechsler Preschool and Primary Scale of Intelligence, Third Edition) were obtained. A multiple regression analysis was performed and correlations obtained. Results from a total of 93patients (86 males, seven females) were retained for analysis. Mean age was 3years 8 months (SD 10mo, range 2.5-4.75y). Cognitive scores were widely distributed, with 73% of participants displaying

a global IQ score of 70 or more, despite concurrent global delay. Significant correlation was present for fine motor and expressive language scores, when isolated and compared with cognitive performance (p values of 0.04 and 0.05 respectively). The conclusion was made that an initial diagnosis of global developmental delay is not necessarily associated with objective cognitive impairment.

A study was conducted on Motor performance of neonatal risk and non-risk children at early school age, the motor skills of 382 children with neonatal risk factors and 107 children with no risk factors, in the age group 8-9 years, were studied using the Test of Motor Impairment (Stott-Moyes-Henderson). Neonatal disturbances, such as low birth weight and neurological symptoms were associated with marked clumsiness. The test performance was found, unexpectedly, to be significantly affected by age and sex in both the study and the control group.

3. Literature Related to Cognitive Development.

A community-based cross-sectional study was carried out in 520 children in Delhi to assess the socio-emotional and cognitive development in children 0–5 years and to find out the proportion of children having developmental delay and its associated factors. In all, 10.6% of children<5 years old were found to be developmentally delayed. Maximum number of children (10.1%) were found to have a delay in the domain of 'hearing language, concept development'. Of all the factors, the strongest association was found with stunting, paternal education, alcohol abuse, attendance in anganwadi/playschool. The study concludes that developmental delay is present in a sizable proportion of children< 5 years of age and may be a significant factor in the overall achievement of life's potential in them.

A Cohort study was conducted in university of Maryland to investigate whether living in a three generation house hold is associated with fewer behavioural problem and better cognitive development among preschool children of mothers who gave birth during adolescents.194 mothers who were adolescents among that 39% had a history of maltreatment and 32% of mother had depression scores in the clinical range. The result says that children who

had been reported for maltreatment or had mother with depressing syndrome were more likely to internalizing problems compared with children with neither risk.

A study was conducted on changing patterns of neurological and developmental functioning between 1 and 7 years of age were studied in very low-birth-weight infants. Subjects included 42 infants born in 1975 who were followed for 7 years. Based on the 1-year neurological assessment, 22 infants were classified as normal, 12 as suspect, and eight as abnormal. The neurological findings at 7 years of age were significantly related to the neurological examination findings at 1 year of age. Seventy-seven percent of the normal group, 58% of the suspect group, and 100% of the abnormal group remained in the same neurologic category at 7 years of age. Children in the abnormal group had the greatest improvement in cognitive functioning between 1 and 7 years of age but did not achieve the IQ level of children in the normal group. Forty-five percent of the normal group, 75% of the suspect group, and 100% of the abnormal group had poor visual-motor integration. Fifty-eight percent of the suspect group and 87% of the abnormal group were reading below age level. Of the total sample, 54% required special education or resource help at 7 years of age, and the three groups differed significantly in their need for a special educational plan (P less than .05). These data indicate that a neurological classification at 1 year of age provides a guide for monitoring very low-birth-weight infants and can be helpful in alerting school personnel to potential needs.

The University of Sydney Discipline of Paediatrics and Child Health hospital in Australia conducted a study to compare the physical activity behaviour of young preschool-aged children and older children, due in part to biological, psychosocial and cognitive immaturity. This paper (a) provides an overview the relevant development of young children in relation to physical activity; and (b) outlines the relationship between child development, play, and physical activity in young children. Understanding, assessing and promoting physical activity in young children should include identification of contextual factors such as developmental stage and aspects of play.

A comparative study of the health status of infants and preschool children was done in Jabalpur city and villages under the Field Health Centre, Natwara. The study was done by taking the family as the unit of study. In all, 151 families in the rural and 85 in the urban area and a total of 391 children, 255 in the rural and 136 in the urban area were studied. The

information regarding socio-economic conditions of the families, birth history, feeding patterns, anthropometric data, morbidity, personal hygiene, family planning and laboratory investigation for both rural and urban groups of children was elicited and analyzed and a comparison made between the rural and urban areas.

An observational study was conducted by University of Education, Tokushima on cognitive and behavioural development in pre-school and school children. It has been reported that school-aged children have numerous difficulties in their school class. They used three psychological tests to investigate whether there is a relationship between intelligence and cognitive, behavioural development in children. The three tests used were an intelligence test (WIPPSI, WISC-lll), the P-F (Picture Frustration) study, and behavioural assessment by their parents. In the P-F study, 60% of 23 children showed a GCR% (Group Conformity Rating) above or below the standard. There was no relationship between GCR% and IQ. In the behavioural assessment by their parents, over 50% of 40 children showed maladaptive behaviours. The high VIQ group showed more maladaptive behaviours than the low VIQ group. The findings suggest that school-aged children need educational treatment for social deficits and maladaptive behaviours.

A longitudinal study was conducted by Smith College, Northampton, Massachusetts, USA to assess evidential in Tibetan: acquisition, semantics, and cognitive development. They describe the nature of the evidential system in Tibetan and consider the challenges that any evidential system presents to language acquisition. They present data from Tibetan-speaking children that shed light on their understanding of the syntactic and semantic properties of evidential, and their competence in the point-of-view shift required for the use of evidential in questions. We then examine connections between the mastery of indirect evidential and children's inferential competence.

4. **Literature Related to Knowledge Regarding Parental Role on Growth and Development of Children**.

A Cross-sectional study was conducted to associate relationships between weight status and child, parent and community characteristics and risk factors among preschool. Children from 140 children and their parents from 11 randomly selected preschools. Outcome variables included are motor development; perceived competence; objectively measured physical activity; time spent in active and quiet play; location and number of televisions; parental rules around physical activity and time spent watching television; availability of sport and physical activity programs; and parks and open spaces and access to footpaths. Overweight children spent more time in quiet play and watching television and less time in active play and physical activity. Perceived competence and motor development were similar for both overweight and non-overweight children. Associations between weight status and several parent and community characteristics were not evident, except for access to footpaths. Overweight children had greater access to footpaths compared with non-overweight children ($p=0.046$). The results reported here showed little difference between overweight and non-overweight children in relation to a variety of child, parent and community variables.

An on line survey was conducted at Hospital for Children, Wilmington, to assess parental knowledge and understanding of growth charts. Methods: An online survey was conducted with 1000 parents selected to be demographically representative of the US population. Questions explored awareness of, knowledge of, and attitudes toward growth monitoring, as well as the ability to interpret growth chart data. Results: Seventy-nine percent of parents surveyed claimed to have seen a growth chart before, with the majority thinking that they understood it well. 64% of parents thought it was important to be shown growth charts to see how their child was growing, and 40% expressed the need to see their child's growth chart as confirmation of their health care provider's verbal interpretation. However, when provided with multiple-choice questions and answers, only 64% could identify a child's weight when shown a plotted point on a growth chart. 96% had heard of the term "percentile," but only 68% identified the percentile of the plotted point, and only 56% could identify the definition of percentile. Up to 77% interpreted incorrectly charts containing height/weight measurements in tandem. Conclusions: Although growth charts are used frequently as visual aids to educate parents about their children's growth, many parents cannot comprehend the data. This finding is significant because many parents prefer to be shown growth charts by their health care provider, and many parents report recording their children's measurements on growth charts at home.

CHAPTER – III

METHODOLOGY

Research methodology involves the systematic procedure, by which the investigator starts from the initial identification of the problem to the final conclusion. It is a science of study how research is done scientifically. The methodology of research indicates the general pattern of organizing the procedure of gathering valid and reliable data for the problem under investigation.

The chapter includes with the description of the research approach, research design, the setting, the population the sample and sample technique, development and description of tool, procedure for data collection and plan for data analysis.

Research Approach

Research approach is the most significant part of any research. The appropriate choice of research approach depends upon the purpose of the research study, which has been undertaken. A descriptive survey approach is used in this study to assess different aspects of growth and development among pre-school children of Anganwadies in selected urban and rural area at Coimbatore district.

Research Design

The research design is a researcher plan for obtaining answers to the research questions (or) for testing the hypothesis. The research design spells out the basic strategies the researcher adopts to develop information which is accurate and interpretable. The investigator selected comparative design to assess different aspects of growth and development among pre-school children

Setting of the Study

Setting is the physical location and condition in which data collection takes place in a study (Polit and Hungler).

The study was conducted in Anganwadi of rural, Papampatti under Moppiripalayam Town Panchayat, Sulur, and Anganwadi of urban, Kuniyamuthur under Kuniyamuthur Municipality, Perur.

Variables

Study Variables

Study variable include selected aspects of growth and development such as physical, motor and cognitive development of preschool children (3-5) in urban and rural anganwadie Coimbatore.

Demographic variables

The demographic variables of the child include age, gender, birth order, immunization status and demographic variables of the family include occupation of the father, type of the family, religion of family, education of mother, education of father, income of the family, total number of children and dietary pattern.

Population

The population is defined as the entire aggregation of cases that meet a designated set of criteria. In the present study, the population was preschool children who were coming in Anganwadi of rural, Papampatti under Moppiripalayam Town Panchayat, Sulur, and Anganwadi of urban, Kuniyamuthur under Kuniyamuthur Municipality, Perur.

Sample and Sampling Technique

Sample is defined as the subset of the population selected to participate in the research study. (Polit & Hungler)

Sampling is the process of selecting representative units of a population for study in a research. Stratified random sampling method was used to select the anganwadies, from urban and rural community. Total samples were 90. Further according the age the sub strata has been divided into three year, four years and five years preschool children. Each age group 15 samples were selected by lottery method. Investigator has taken oral consent from each anganwadi worker and mothers of preschool children in both urban and rural communities.

Inclusion Criteria

The study include preschool children who are

1. Aged between 3-5 years residing in rural and urban area.
2. Preschool children's at selected urban and rural Anganwadies at Coimbatore.

Exclusion Criteria

The study excludes the preschool children who are

1. Preschool children whose mothers have not given consent.
2. Children were having sickness.

Selection and Development of Tool

Biophysical measurement and structured observational checklist was used as a tool for this study. It was considered to be the most appropriate instrument to elicit the response from subjects.

Development of the Tool

A structured interview schedule was used to assess the demographic variables of family from preschool children's mothers, bio physiological measurement was used to assess the physical development of child to measure height, weight, MAC,CC, HC by using weighing machine and inch tape, observational check list and activity sheet was used to measure for motor and cognitive development. This tool has two sections such as assessing the demographic variable, and selected area of growth and development (anthropometric, motor development and cognitive measurements.)

Description of the Tool

The tool used in the present study consisted of following components.

Section-A: This section consists of 12 items pertaining to socio-demographic data of the preschool child such age, gender, birth order, immunization status and demographic variables of the family include occupation of the father, type of the family, religion of family, education of mother, education of father, income of the family, total number of children and dietary pattern.

Section-B: This section consists of items to Asses the growth and development; this section was divided in to 3 areas under following headings:

- It deals with the anthropometric measurement of rural and urban preschool children comprising of 5 items
- It deals with motor development of rural and urban preschool children. comprising of 15 items

- It deals with cognitive development of rural and urban preschool children. comprising of 10 items

Content Validity of the Tool

Content validity of the tool was established on the basis of opinion from seven experts five from nursing, one from paediatrician, one from Biostatistician. The tools were sent to them with a request to go through the tool and to suggest necessary modification. The suggestions and minor correction recommended by the experts were incorporated and instrument was finalized

Reliability of the Tool

The investigator used stratified random sampling technique to select the sample from the total population. 10 children were selected for the pilot study. The reliability of the tool was established using split half method and Karl Pearson correlation coefficient formula and observed tool, found highly reliable, as the 'r' value was r=0.96.The findings of the pilot study revealed that the study is feasible.

Ethical Consideration

The research committee approved the study and a formal permission was obtained from the head of the institution. Oral consent of each of the subjects, Anganwadies workers and mother of preschooler was obtained before starting data in the study of Anganwadi of rural, Papampatti under Moppiripalayam Town Panchayat, Sulur, and Anganwadi of urban, Kuniyamuthur under Kuniyamuthur Municipality, Perur. No ethical issues confronted while conducting the study.

Pilot Study:

Pilot study, which is a small-scale, version or trial run of the major study**.** The pilot study was conducted on Anganwadi of rural, Papampatti under Moppiripalayam

Town Panchayat, Sulur, and Anganwadi of urban, Kuniyamuthur under Kuniyamuthur Municipality, Perur. An administrative approval was obtained from the concerned authorities.

The purpose of the pilot study was

- To find out the reliability of the tool and feasibility for the final study.
- To determine the time duration for administration of the observational checklist to parents
- To determine the method of statistical analysis.

Method of Data Collection

Formal permission was obtained from Child Development Project Officer, Coimbatore, to conduct the major study. After briefing the purpose of the study to the participants, the data was collected over a period of four weeks, at an average of three to four children per day. The investigator administered the structured interview schedule to assess the demographic variables, check list was used to assess the physical development of child by using weighing machine and inch tape, observational check list and activity sheet was used for assessing motor and cognitive development., approximately 40 to 50 minutes was taken by the participants. After collecting the activity sheet, the guide sheets were distributed to the respondents.

Processing Data

Data collected was processed every day and missed out subjects were identified and interviewed next day.

Plan of Data Analysis and Interpretation

The data analysis is the process of organizing and synthesizing data so as to answer research question and test the hypotheses.

The data obtained were analyzed in terms of the objective of the study using descriptive and inferential statistics. The plan for data analysis is as follows,

Descriptive Statistics

- Frequency and percentage distribution were used to study the demographic variables of child age, gender, birth order, immunization status and demographic variables of the family include occupation of the father, type of the family, religion of family, education of mother, education of father, income of the family, total number of children and dietary pattern.

- Mean, median and standard deviation were used to assess the level of growth and development of preschooler children within selected demographic variables.

Inferential Statistics

- It includes the correlation coefficient to find out correlation between urban and rural of preschool children regarding growth and development. Pearson's correlation was used to correlate

- Karl-pearson probability test and Chi-square test, which was used to associate growth and development of the selected demographic variables.

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data to assess different aspects of growth and development among 90 pre-school children of Anganwadies in selected urban and rural area in Coimbatore.

The purpose of analysis is to reduce the data into an interpretable and meaningful form so that the results can compared and significance can be identified. Kerlinger (1976) has defined analysis as categorizing, ordering, manipulating and summarizing of data to obtain answers to research hypothesis questions.

The data themselves do not provide us with answer to our research questions. In order to answer the research questions meaningfully, the data must be presented and analyzed in some order, so that the relationship can be discerned.

This chapter provides details of the analysis and interpretation of data collected from 90 preschool children in order to assess the selected aspect of growth and development. The data collected was organized, tabulated, analyzed and interpreted by using descriptive and inferential statistics. The analysis and interpretation was based on the data collected through structured observational schedule

Organization and presentation of the data:

The data collected were edited, tabulated, analyzed, interpreted and findings were presented in the form of tables and diagrams represent under the following areas.

Section A: Assessment of Demographic Variables Among Urban and Rural Pre-School Children.

Section B: Assessment of Physical growth of urban and rural preschool children.

Section C: Comparison of Urban and rural anthropometric measures of preschool children.

Section D: Assessment of Motor development of urban and rural preschool children.

Section E: Assessment of cognitive development of urban and rural preschool children.

Section F: Comparison of motor development of urban and rural preschool children.

Section G: Association of physical growth of rural children with selected demographic variables

Section A

Assessment of demographic variables among urban and rural pre-school children.

Table 4.1 Frequency and percentage distribution of urban and rural pre-school children by age, gender, birth order of child, immunization status, occupation of father, and type of family.

(n=90)

Sl. No	Demographic Variables	Urban (n=45)		Rural (n=45)	
		No	%	No	%
Demographic data on Child					
1	Age of the child				
	Three year old	15	33.3	15	33.3
	Four year old	15	33.3	15	33.3
	Five year old	15	33.3	15	33.3
2	Gender of the child				
	Male	22	48.9	14	31.1
	Female	23	51.1	31	68.9
3	Birth order of the child				
	One	14	31.1	10	22.2
	Two	26	57.8	18	40.0
	Three	5	11.1	9	20.0
	Above three	0	0.0	8	17.8
4	Immunization status				
	Primary (BCG, OPV, MMR, DPT)	4	8.9	6	13.3
	Primary and Boosters (OPV, DPT)	17	37.8	18	40.0
	Any other (Hepatitis)	11	24.4	6	13.3
	All of the above	13	28.9	15	33.3
5	Occupation of father				
	Unemployment	2	4.4	0	0.0
	Daily wages	14	31.1	26	57.8
	Self employment	18	40.0	19	42.2
	Govt. employed	11	24.4	0	0.0
6	Type of Family				
	Nuclear	32	71.1	21	46.7
	Joint	13	28.9	24	53.3

The above table 1.1 shows represents that the frequency and percentage distribution of pre-school children of urban and rural with demographic variables such as age of child, gender of the child, birth order of child, immunization, occupation of the father, type of the family.

With regards to age of preschool children, 15 (33.33%) were in the age group of 3 years, 15 (33.33%) were in the age group of 4 years and 15 (33.33%) were in the age group o to 5 years in urban and rural. In relation to gender of urban preschool children, majority of subjects, 23 (51.11%) were females and 22 (48.89%) were males. In rural preschool children, 31 (68.89%) were females and 14 (31.11%) were male.

With regard to birth order of the child among urban preschool children, 26 (57.78%) were 2^{nd} order child, 14 (31.11%) were 1^{st} order child, 5 (11.11%) were the 3^{rd} order child and none them were 4^{th} order child. In rural preschool children, 18(40.00%) were the 2^{nd} order child, 10(22.22%) were first order child, 9(20.00%) were the 3^{rd} order child, 8(17.78%) were the above 4^{th} order of child.

In relation to the immunization of the child in urban preschool children, 17 (37.78) had primary and booster immunization, 13 (28.89%) had immunized with all of the above i. e the primary, primary and booster, hepatitis, 11 (24.44%) had immunized with hepatitis. In rural preschool children, immunization of the children, 18 (40.00%) had immunized with primary and booster dose, 15 (33.34%) had immunized with the entire doses i. e primary, primary and booster, hepatitis and 6 (33.33%) had immunized with primary and hepatitis.

In relation to occupation of father in urban preschool children, 18(40.00%) were self employed, 14 (31.11%) were on daily wages, 11 (24.44%) were government employed, 2 (4.44%) were unemployed in urban. In rural preschool children, 26 (57.78%) were working on daily wages, 19 (42.22%) were self-employed. In relation to type of the family of the urban preschool children, 32 (71.11%) were belongs to nuclear

family where as 13 (28.89%) were belongs to joint family. In rural preschool children, 24 (53.33%) were belongs to joint family and 21 (46.67%) were belongs to nuclear family.

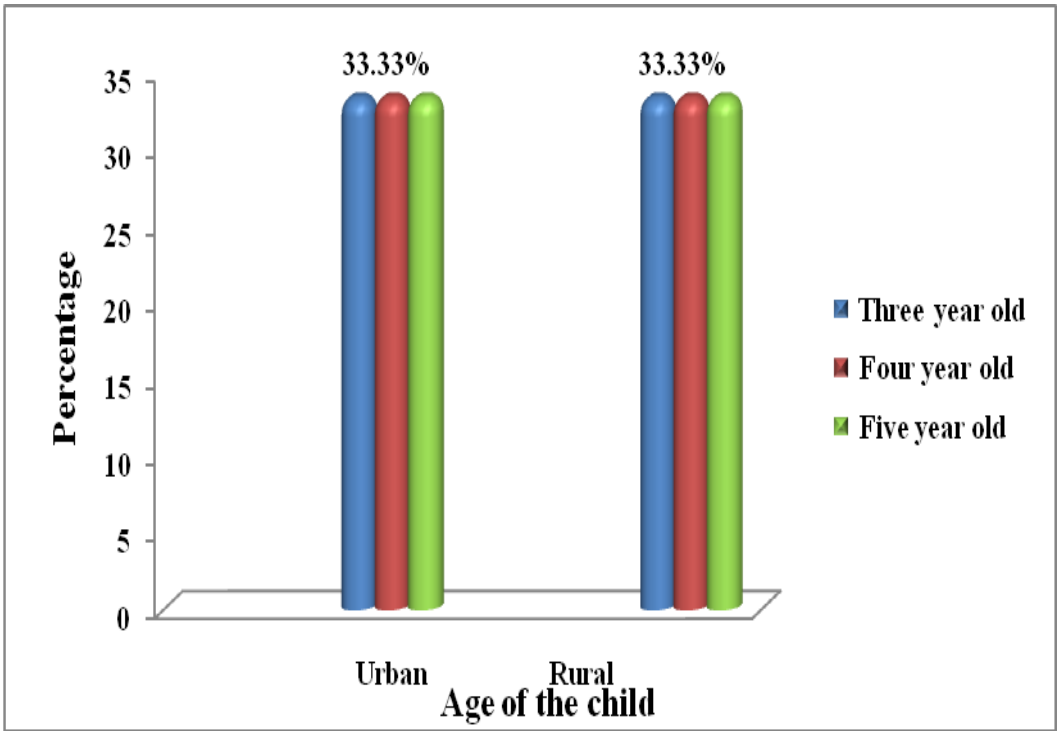

Figure-4.1: Percentage distribution of urban and rural children according to age**.**

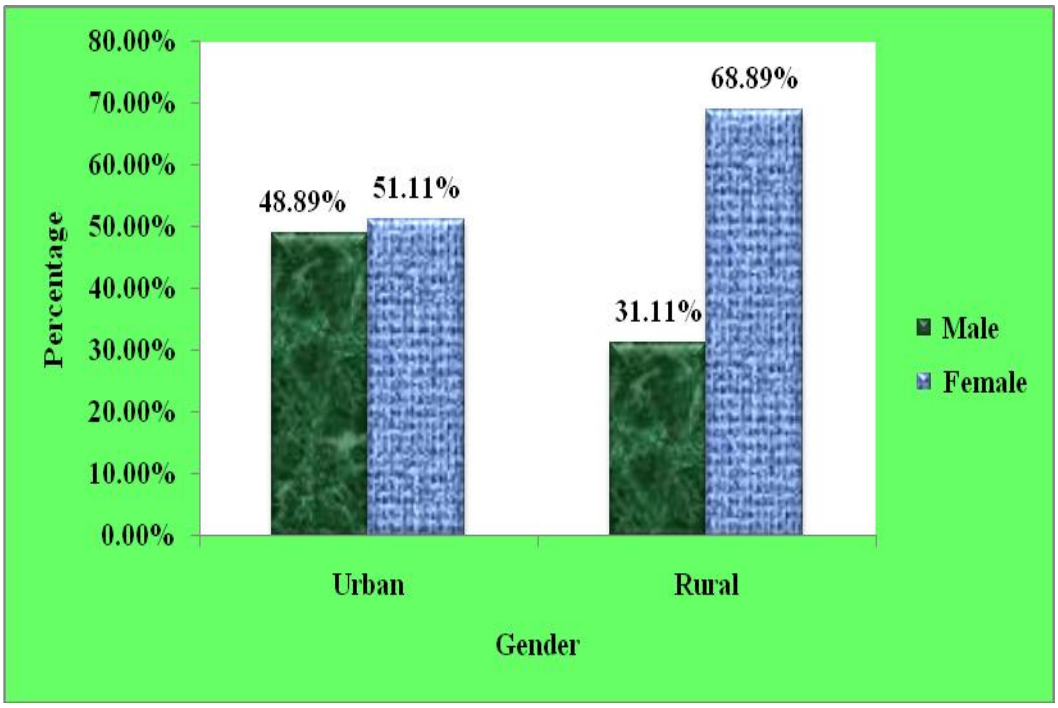

Figure -4.2: Percentage distributions of urban and rural children according to gender.

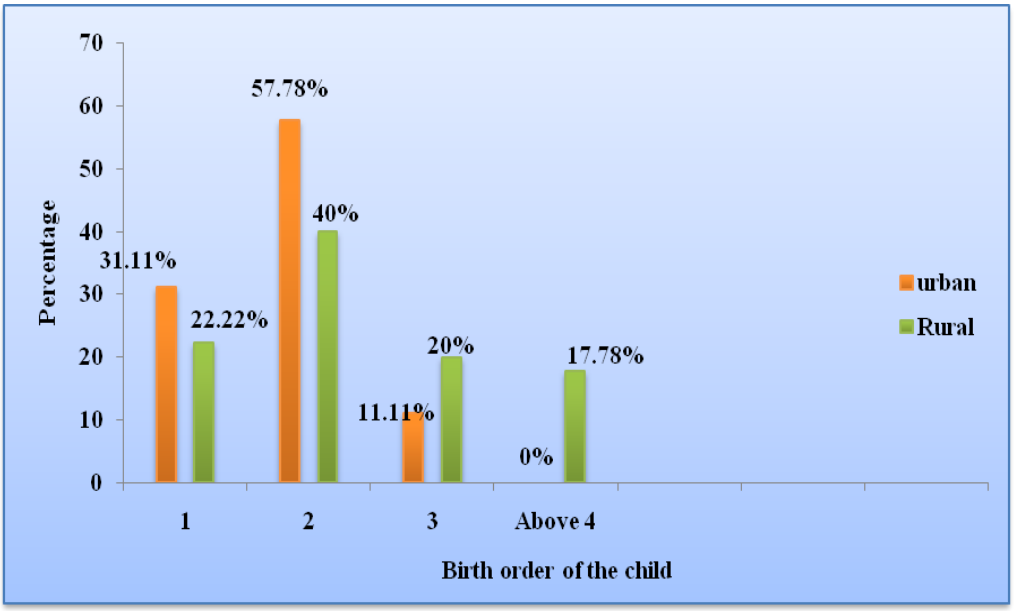

Figure -4.3: Percentage distributions of urban and rural children according to birth order.

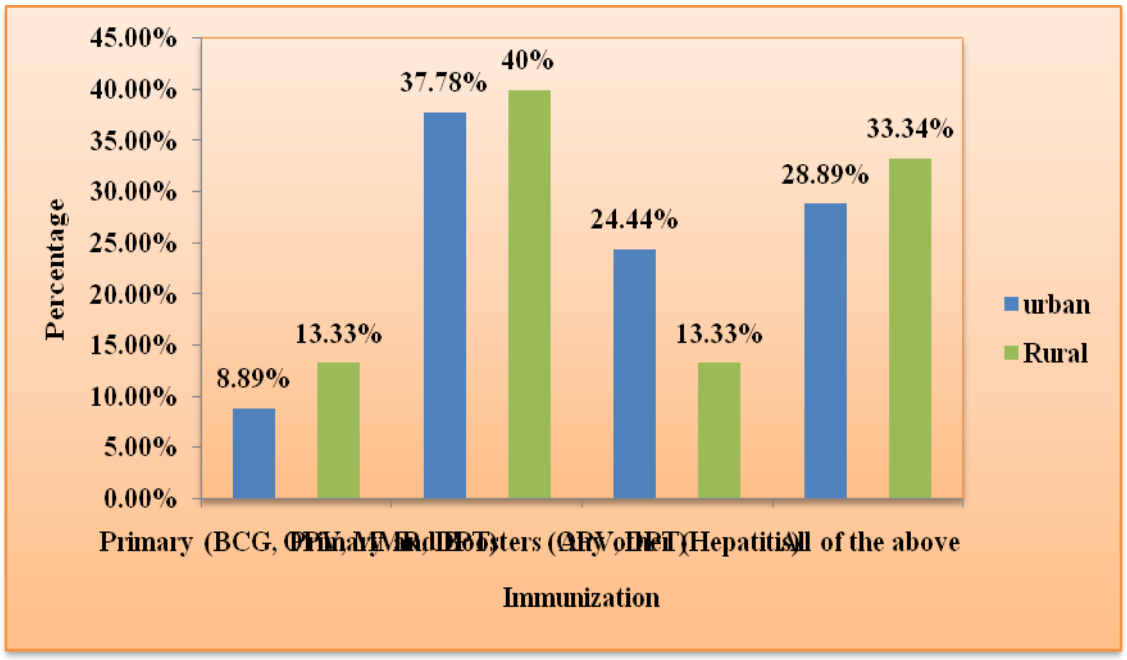

Figure -4.4: Percentage distributions of urban and rural children according to immunization

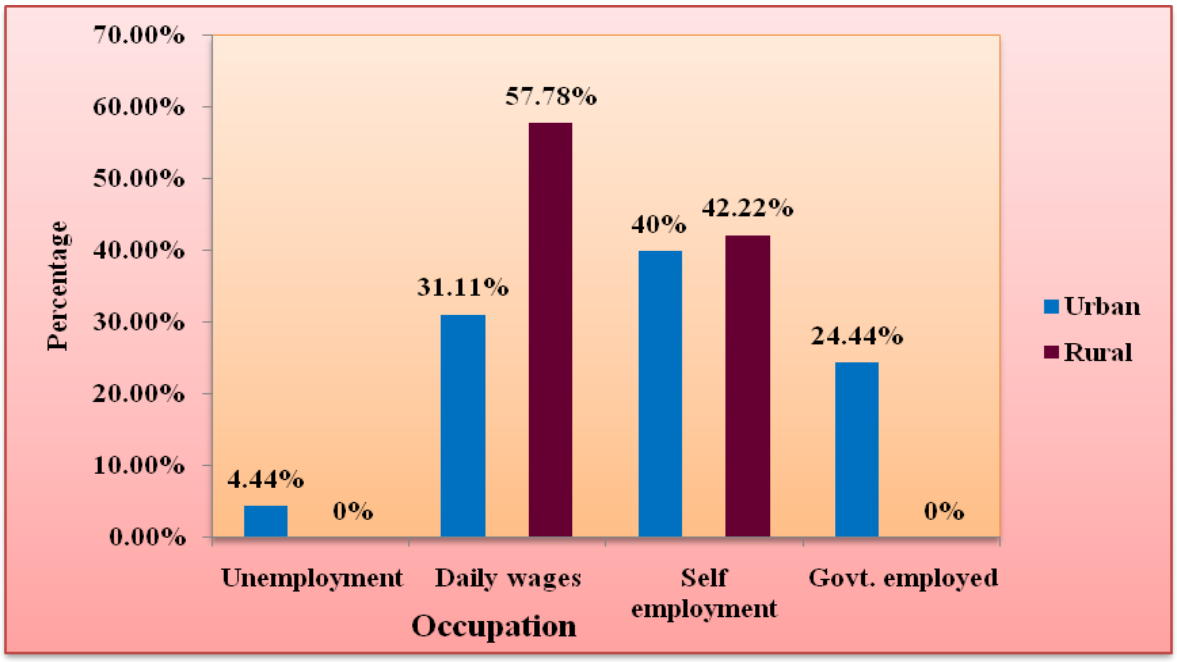

Figure -4.5: Percentage distributions of urban and rural children according to occupation

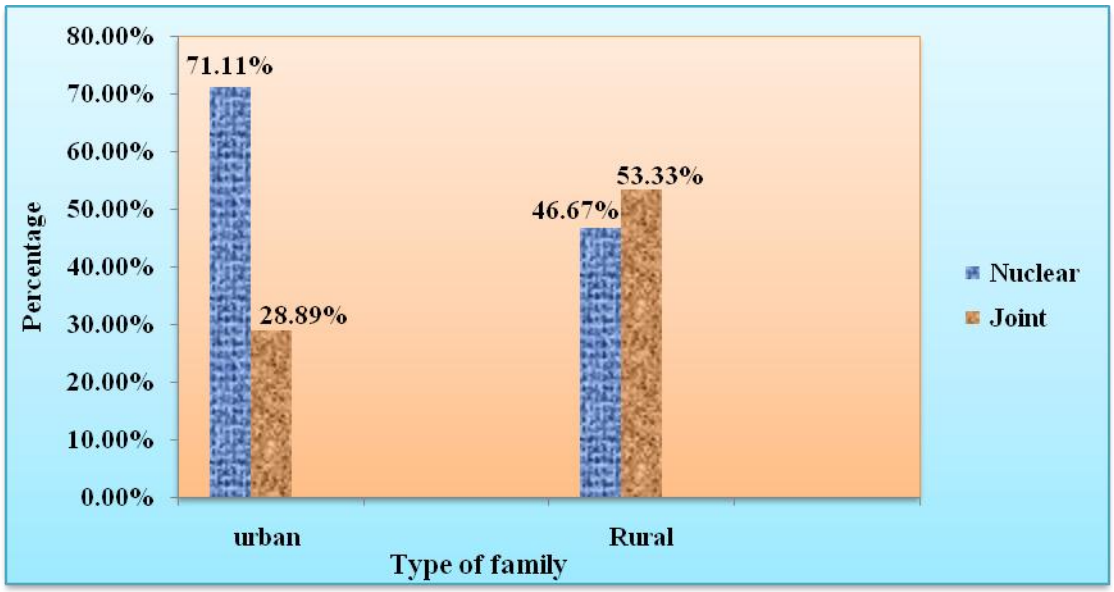

Figure -4.6: Percentage distributions of urban and rural children according to type of family

Table 4.2 Frequency and Percentage Distribution of urban and rural preschool children's family by religion, education of mother, education of mother, income of family, total no. of children, dietary pattern.

n=90

Sl. No	Demographic Variables	Urban(n=45)		Rural(n=45)	
		No	%	No	%
1	Religion of the family				
	Hindu	20.0	45.4	30.0	66.7
	Muslim	14.0	30.2	15.0	33.3
	Christian	11.0	24.4	0.0	0.0
	Others	0.0	0.0	0.0	0.0
2	Education of mother				
	Illiterate	6.0	13.3	11.0	24.4
	Primary	13.0	28.9	19.0	42.2
	Secondary	18.0	40.0	13.0	28.9
	Higher Secondary	7.0	15.6	2.0	4.4
	Graduate	1.0	2.2	0.0	0.0

3	Education of Father				
	Illiterate	3.0	6.7	5.0	11.1
	Primary	10.0	22.2	9.0	20.0
	Secondary	10.0	22.2	14.0	31.1
	Higher Secondary	14.0	31.1	9.0	20.0
	Graduate	8.0	17.8	8.0	17.8
4	Income of the family (per month)				
	Below 5000	3.0	6.7	6.0	13.3
	5001 to 10,000	8.0	17.8	22.0	48.9
	10,001 to 15,000	13.0	28.9	17.0	37.8
	Above 15,000	21.0	46.7	0.0	0.0
5	Total no of children				
	One	14.0	31.1	11.0	24.4
	Two	27.0	60.0	14.0	31.1
	Three	4.0	8.9	17.0	37.8
	More than three	0.0	0.0	3.0	6.7
6	Dietary pattern				
	Vegetarian	11.0	24.4	16.0	35.6
	Non vegetarian	34.0	75.6	29.0	64.4

Table 4.2: represents that the frequency and percentage distribution of pre-school children of urban and rural with demographic variables such as religion of the family, education of mother, education of father, income of the family (per month), total number of child and dietary pattern

It is observed from the present study that, regarding religion of the family in urban preschool children, 20 (45.4%) were Hindu, 14 (30.2%) was Muslim and 11 (24.4%) were Christian in urban. In rural preschool children, 30 (66.67%) were Hindu, and 15(33.33%) were Muslim.

Considering educational status of the mother of urban preschool children, 18 (40%) were secondary education, 13(28.89%) were primary education, 7 (15.56%) were higher secondary education and 6 (13.33%) were illiterate. In rural preschool

children, 19 (42.22%) were primary education, 13 (28.89%) secondary education, 11(24.42%) are illiterate and 2 (4.44%) were secondary education.

In relation to education of father of urban preschool children, 14(31.11%) were higher secondary education, 10(22.22) were primary and secondary education, 8 (17.78%) were graduate and 3 (6.67%) were illiterate. In rural preschool children, 14(31.11%) were secondary education, 9 (20.20%) were primary and higher primary education. 8 (17.78%) were graduate and 5 (11.11%) were illiterate.

With regard to income of urban family in urban preschool children, 21(46.67%) were earning Rs 15,000 per month, 13 (28.89%) were earning between Rs 10,001 to 15,000, 8(17.78%) were earning between Rs 5001 to 10,000 and 3(6.67%) were earning below Rs 5,000. In rural 22 (48.89%) were earning between Rs 5001 to 10,000 per month, 17 (37.78%) were earning Rs 10,001 to 15,000, and 6(13.33) were earning below Rs5000 per month.

In relation to total number of the children in the family in urban preschool children, 27 (60.00%) were having two children, 14(31.11) were having one child, and 4 (8.89%) are having three children. In rural 17 (37.78%) were having three children, 14 (31.11%) were having two children, 11 (24.44%) are having one child in the family.

In relation to the dietary pattern of family in urban preschool children, 34(75.56%) were non-vegetarian, and 11 (24.44%) were vegetarian in urban. In rural, 29(64.44%) were non-vegetarian and 16 (35.56%) were vegetarian.

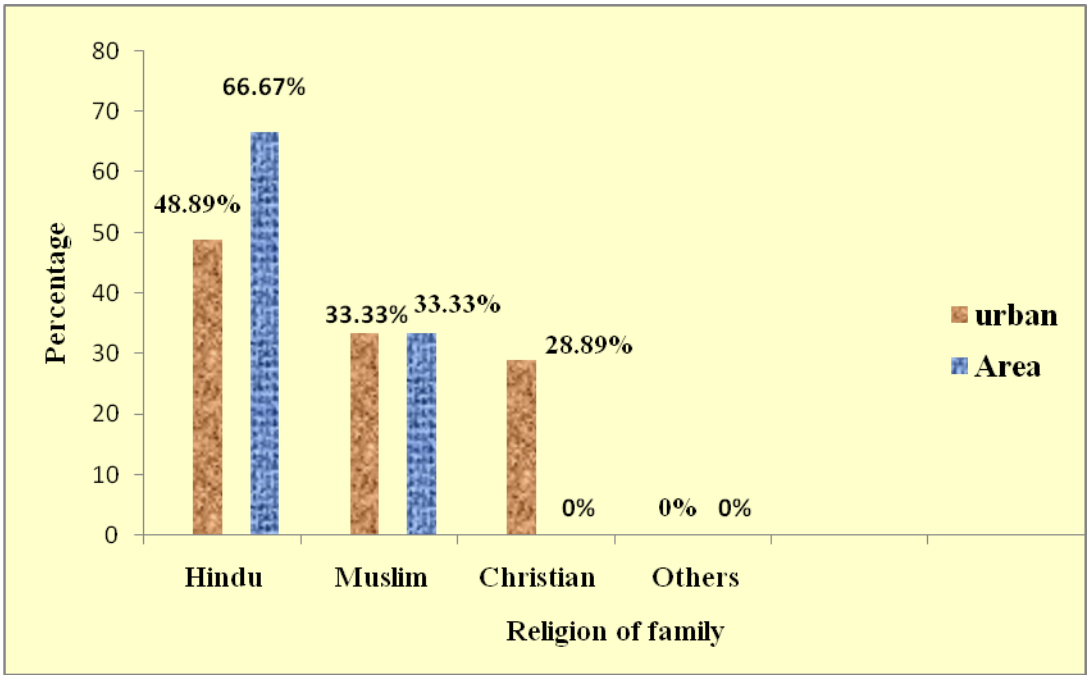

Figure -4.7: Percentage distributions of urban and rural children according to religion

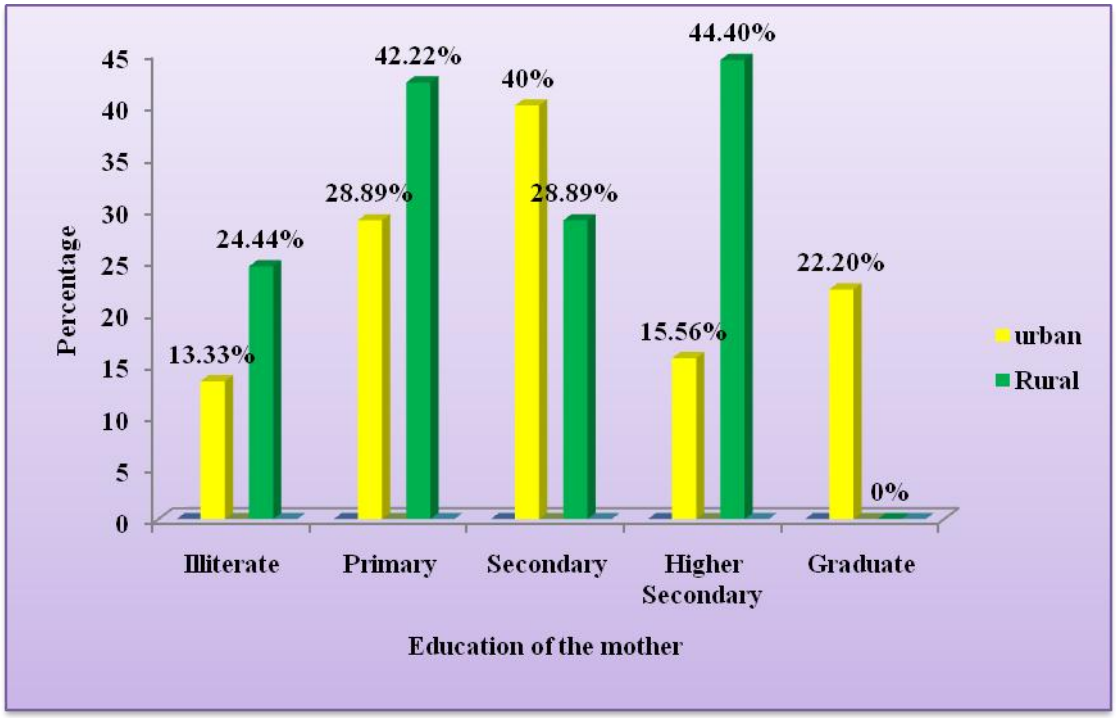

Figure -4.8: Percentage distributions of urban and rural children according to education of mother

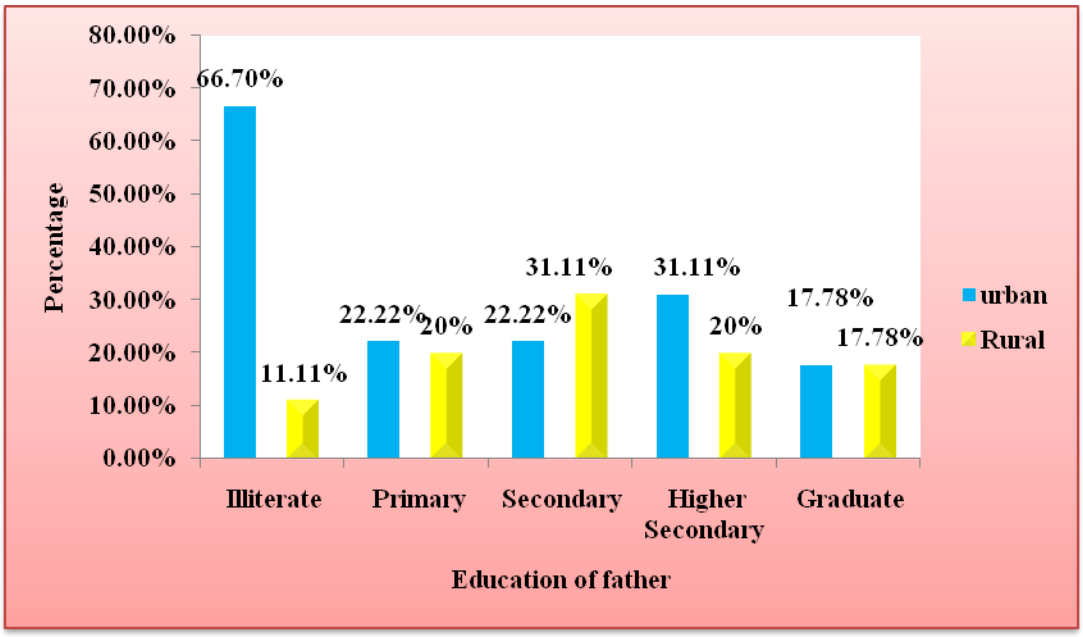

Figure -4.9: Percentages distribution of urban and rural children according to education of father

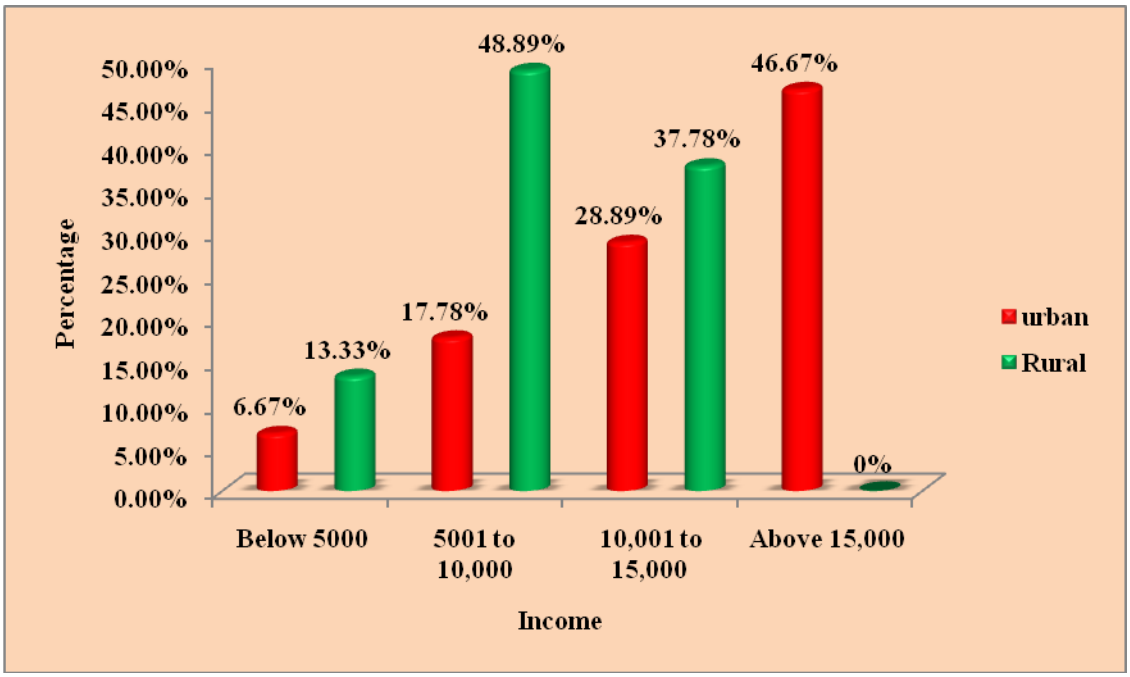

Figure -4.10: Percentage distributions of urban and rural children according income of the family

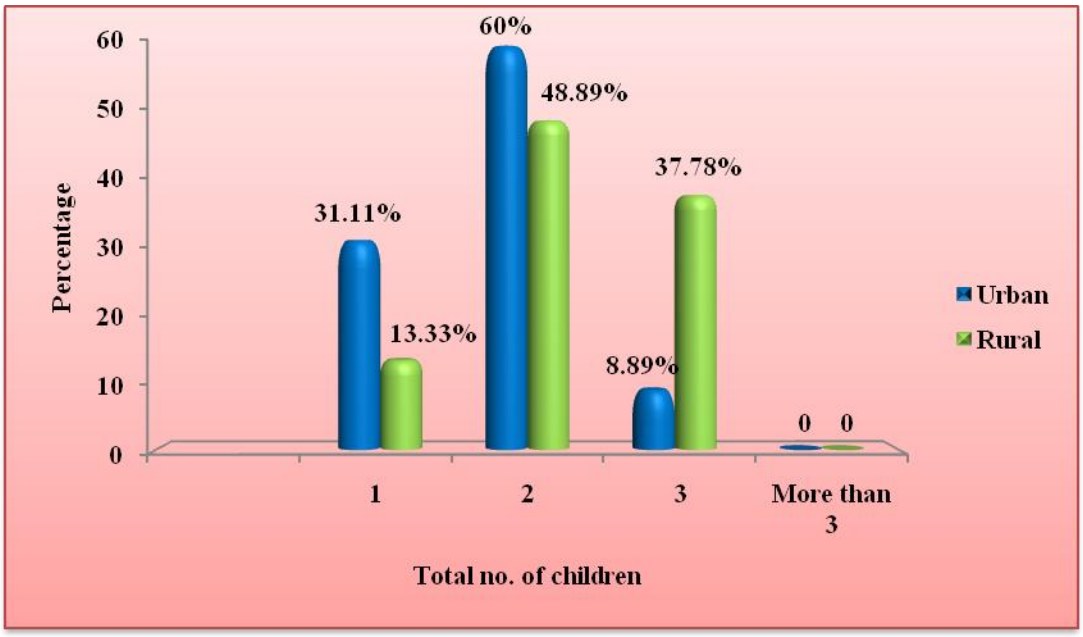

Figure -4.11: Percentage distributions of urban and rural children according to no. of children

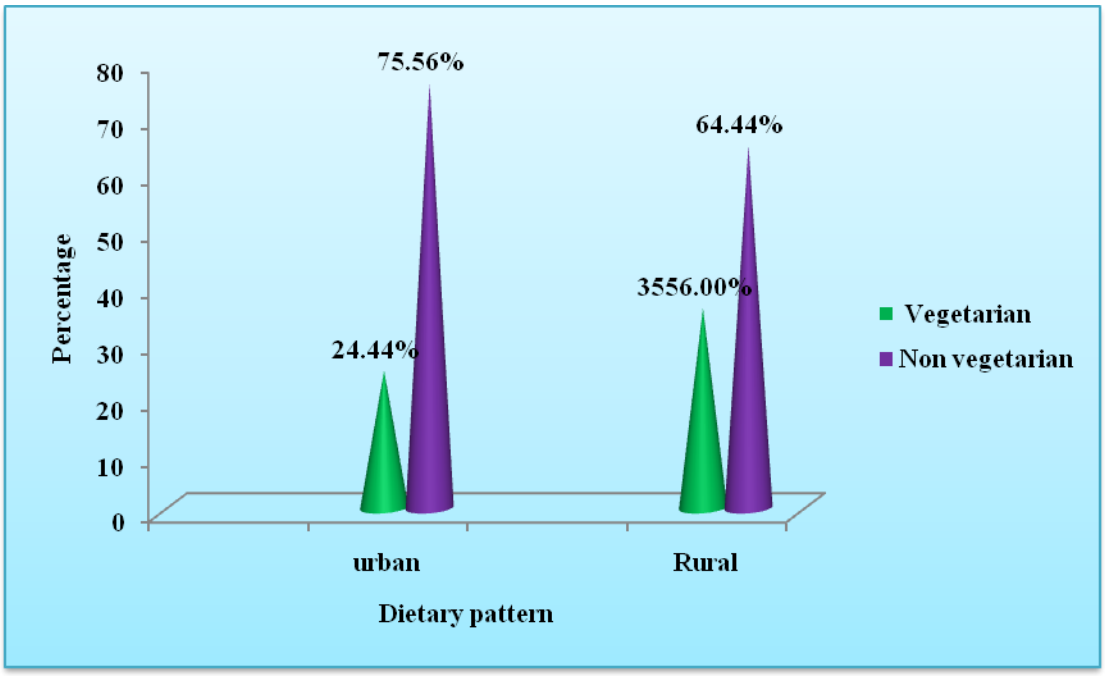

Figure r-4.12: Percentage distributions of urban and rural children according to dietary pattern

Section B:

Assessment of Physical growth of urban and rural preschool children.

Table 4.3: Frequency and percentage distribution of physical assessment of three years Urban and Rural preschooler

n=30

Parameters Of age three years	Normal range of parameters		Urban				Rural			
			Achieved		Not Achieved		Achieved		Not Achieved	
	<N	>N	No	%	No	%	No	%	No	%
Height(Cms)	87	97	15	100	0	0	8	53	7	47
Weight(Kgs)	11	13	15	100	0	0	10	67	5	33
MAC. (Cms)	13	15	13	87	2	13	14	93	1	6.7
CC(Cms)	26.1	52.2	13	87	2	13	15	100	0	0
HC(Cms)	43.4	49	15	100	0	0	15	100	0	0
Overall			11	73	4	27	5	33	10	67

Table 2.1 represents that out of 15 three year physical development of preschool children, with regards height of urban preschool children, 15 (100%) were achieved the normal height, while as in rural only 8 (53.33%) of preschool children were achieved normal height and 7 (46.67%) were not achieved height according to ICMR standard measures.

In relation to weight of urban preschool children, 15 (100%) of them were achieved normal weight, where as in rural preschool children, 10 (66.67%) were achieved the normal weight and 5 (33.33) not achieved normal weight.

With regarding to mid arm circumference (MAC) of urban preschool children, 13 (86.67%) were achieved normal MAC and 2 (13.33) of them were not achieved the normal MAC. In rural preschool children, 14 (93.33%) were achieved the MAC and 1 (6.67) has not achieved the MAC.

In relation to chest circumference (CC) of the urban preschool children, 13 (86.67%) were achieved the normal CC and 2 (13.33%) were not achieved the normal CC. In rural preschool children, 15 (100%) of the children were achieved normal CC.

With regard to head circumference (HC) of urban preschool children, 15 (100%) were achieved the HC. In rural preschool children also 15 (100%) were achieved (HC).

Overall, among three year urban preschool children, 11 (73.33%) were achieved physical growth and 4 (26.67%) were not achieved the normal physical growth. In three year rural preschool children, 5 (33.33%) were achieved the normal physical growth and 10 (66.67%) were not achieved the normal physical growth.

Table 4.4: Frequency and percentage distribution of physical assessment of four years Urban and Rural preschooler

n=30

Parameters of age four years	Normal range of parameters		Urban				Rural			
			Achieved		Not achieved		Achieved		Not achieved	
	<N	>N	No	%	No	%	No	%	No	%
Height(Cms)	94	98	15	100	0	0	13	86.7	2	13.33
Weight(Kgs)	13	15	15	100	0	0	13	86.7	2	13.33
MAC. (Cms)	15	16	14	93.3	1	6.67	13	86.7	2	13.33
CC(Cms)	26.4	53.4	13	86.7	2	13.33	13	86.7	2	13.33
HC(Cms)	44.3	50	14	93.3	1	6.67	10	66.7	5	33.33
Overall			11	73.3	4	26.67	5	33.3	10	66.67

Table 2.2 represents that four year physical development of preschooler, with regard to height of urban preschool children, 15 (100%) of achieved the normal height, while as 13 (86.67%) of rural preschool children has achieved normal height and 2 (13.33%) were not achieved the height according to ICMR standard measures.

In relation to weight of urban preschool children, 15 (100%) of them were having normal weight, where as in rural preschool children, 13 (86.67%) were achieved the normal weight and 2 (13.33%) not achieved normal weight.

With regard to mid arm circumference (MAC), 14 (93.33%) of urban preschool children were achieved normal MAC and 1 (6.67%) of them were not achieved the normal MAC. In rural preschool children, 13 (86.67%) were achieved the MAC and 2 (13.33%) has not achieved the MAC.

Considering the chest circumference (CC), the urban preschool children, 13 (86.67%) were achieved the CC and 2 (13.33%) were not achieved the CC. In rural, 13 (86.67%) of the children were achieved normal CC and 2 (13.33%) were not achieved normal CC.

With regarding to head circumference (HC) of urban preschool children, 14 (93.33%) were achieved the HC and 1 (6.67%) were not achieved the HC. In rural preschool children, 10 (66.67%) were having normal head circumference and 5 (33.33%) were not achieved HC.

Overall, among four year urban preschool children, 11 (73.33%) achieved the normal physical growth and 4 (26.67%) were not achieved the normal physical growth. In rural preschool children, 5 (33.33%) were achieved the normal physical growth and 10 (66.67%) were not achieved the normal physical growth.

Table 4.5: Frequency and percentage distribution of physical assessment of five years Urban and Rural preschooler

n=30

Parameters of age five years	Normal range of parameters		Urban				Rural			
			Achieved		Not achieved		Achieved		Not achieved	
	<N	>N	No	%	No	%	No	%	No	%
Height(Cms)	100	104	15	100	0	0	12	80	3	20
Weight(Kgs)	15	17	14	93.3	1	6.67	11	73.3	4	26.67
MAC. (Cms)	15	17	14	93.3	1	6.67	13	86.7	2	13.33
CC(Cms)	27.3	54.6	12	80	3	20	15	100	0	0
HC(Cms)	45.1	50.6	14	93.3	1	6.67	15	100	0	0
Overall			8	53.3	7	46.67	8	53.3	7	46.67

Table 2.3 represents that five year physical development of preschool children. With regards to height of urban preschool children, 15 (100%) were achieved the normal height, whiles in rural preschool children as 12 (80.00%) of has achieved normal height and 3 (20.00%) were not achieved the height according to ICMR standard measures.

In relation to weight of urban children, 14 (93.33%) of them were having normal weight and 1 (6.67) has not achieved the normal weight, where as in rural preschool children, 11 (73.33%) were achieved the normal weight and 4 (26.67%) not achieved normal weight.

With regard to mid arm circumference (MAC) of urban preschool children, 14 (93.33%) of urban children were having normal MAC and 1 (6.67%) of them were not reached to the normal MAC. In rural preschool children, 13 (86.67%) were achieved the MAC and 2 (13.33%) has not achieved the MAC.

In relation to chest circumference (CC) of the urban preschool children, 12 (80.00%) were achieved the CC and 3 (20.00%) were not achieved the CC. In rural, 15 (100%) of the children were having normal CC.

With regarding to head circumference (HC) of the urban preschool children, 14 (93.33%) were achieved the HC and 1 (6.67%) not achieved the HC. In rural preschool children, 15 (100%) were having normal head circumference.

Overall, among five year urban preschool children, 08 (53.33%) achieved the normal physical growth and 7 (46.67%) were not achieved the normal physical growth. In rural preschool children, 08 (53.33%) were achieved the normal physical growth and 7 (46.67%) were not achieved the normal physical growth

Section C:

Comparison of Urban and rural anthropometric measures of preschool children.

Table 4.6: Distribution and comparisons of mean, percentile, SD and t-value of urban and rural anthropometric measurement of preschooler

n=90

Anganwadies	Mean	SD	Percentile	Mean%	t test
Urban	4.67	0.47	80%	93.40	
Rural	4.22	0.73	60%	84.40	2.02*

S*= significant at 0.05 level

The table 3 represents the comparison of urban and rural preschool children physical growth or anthropometrics measurement.

The Mean, SD, Percentile and Mean Percentage of urban preschool children were 4.67, 0.47, 80% and 93.40% respectively.

The Mean, SD, Percentile and mean percentage of rural preschool children were 4.22, 0.73, 60% and 84.40% respectively.

The mean percentage value of urban was 93.40 where as for rural it was 84.40. Thus it indicates that the mean percentage is higher in the urban children.

The obtained paired t-test value for assessing the anthropometrics measurement between urban and rural preschool children was 2. 02 and is significant at 0.05 level.

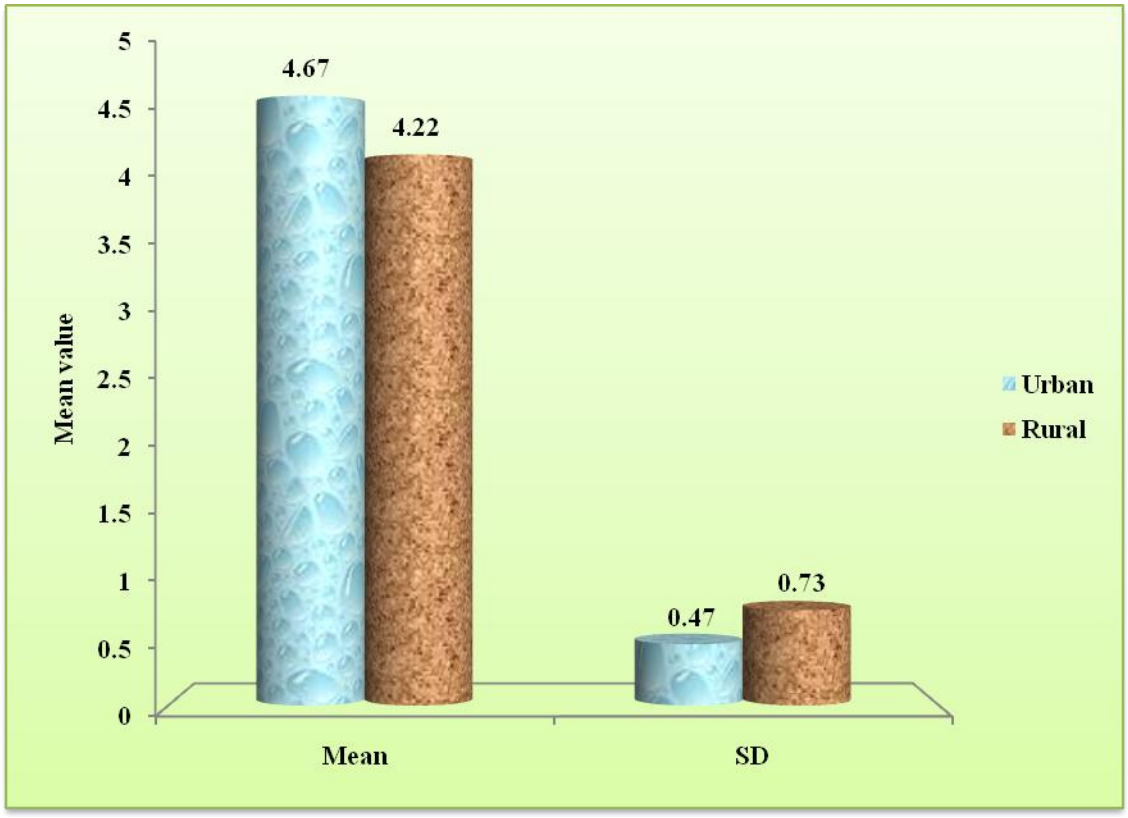

Figure -4.13: Mean and standard Deviation of Physical Development of urban and rural children

Section D:

Assessment of Motor development of urban and rural preschool children.

Table- 4.7. Frequency and percentage distribution of motor development of Urban and Rural preschooler.

n=90

Age	Urban				Rural			
	Achieved		Not achieved		Achieved		Not achieved	
	No	%	No	%	No	%	No	%
3 years	6	40.00	9	60.00	0	0.00	15	100.00
4 years	7	46.67	8	53.33	2	13.33	13	86.67
5 years	3	20.00	12	80.00	1	6.67	14	93.33

The table 4.7 depicts the motor development of urban and rural preschool children. The three years urban preschool children, 6 (40.00%) were achieved the motor development and 9 (60%) were not achieved the motor development. In rural preschool children, 15 (100%) of them had not achieved the motor development.

Among four years urban preschool children, 7 (46.67%) had achieved the motor development and 8 (53.33%) did not achieved the motor development. In rural preschool children, 2 (13.33%) were achieved the normal motor development and 13 (86.67%) were not achieved the motor development.

Among five years urban preschool children, 3 (20.00%) has achieved the motor development and 12 (80.00%) did not achieved the motor development. In rural preschool children, 1 (6.67%) were achieved the normal motor development and 14 (93.33%) were not achieved the motor development.

Section E:

Assessment of cognitive development of urban and rural preschool children.

Table 4.8.Frequency and percentage distribution of cognitive development of Urban and Rural preschooler

n=90

Age	Urban				Rural			
	Achieved		Not achieved		Achieved		Not achieved	
	No	%	No	%	No	%	No	%
3 years	1	6.67	14	93.33	1	6.67	14	93.33
4 years	2	13.33	13	86.67	1	6.67	14	93.33
5 years	5	33.33	10	66.67	2	13.33	13	86.67

The table 4.8 depicts the cognitive development of urban and rural preschool children. The three years urban preschool children 1 (6.67%) was achieved the cognitive development and 14 (93.33%) were not achieved the cognitive development. In rural preschool children, 1 (6.67%) was achieved the cognitive development and 14 (93.33%) had not achieved the cognitive development.

Among four years preschool children, 2 (13.33%) had achieved the cognitive development and 13 (86.67%) did not achieved the cognitive development. In rural preschool children, 1 (6.67%) was achieved the normal cognitive development and 14 (93.33%) were not achieved the cognitive development.

Among five years urban preschool children, 5 (33.33%) has achieved the cognitive development and 10 (66.67%) did not achieved the cognitive development. In rural preschool children, 2 (13.33%) were achieved the normal cognitive development and 13 (86.67%) were not achieved the cognitive development.

Section F:

Comparison of motor development of urban and rural preschool children.

Table 4.9: Distribution and comparisons of Mean, SD and t-value of urban and rural motor development of preschooler

n=90

Area of assessment	Urban		Rural		t – test
	Mean	SD	Mean	SD	
Motor development	12.28	1.53	8	1.59	9.68*

S*= significant at 0.05 level

Table 6.1 represents the Mean and SD of urban and rural preschool children motor development. The Mean and SD of urban were 8, and 1.59 respectively. In rural the Mean and SD was 12.28 and 1.53 respectively. The paired 't' test value of motor development and urban and rural was 9.68 and was significant at 0.05 level.

Table-4.10. Distribution and comparisons of mean, SD and t-value of urban and rural cognitive development of preschooler

n=90

Area of assessment	Urban		Rural		t – test
	Mean	SD	Mean	SD	
Cognitive development	13.93	1	8.92	1.11	1.02

S*= Significant at 0.05 level

Table 6.2 represents the Mean and SD of urban and rural preschool children's cognitive development. The Mean and SD of urban were 13.93 and 1respectively. In rural the mean and standard deviation was 8.92, and 1.11 respectively. The paired 't' test value of cognitive development and urban and rural was 1.02 and was significant at 0.05 levels.

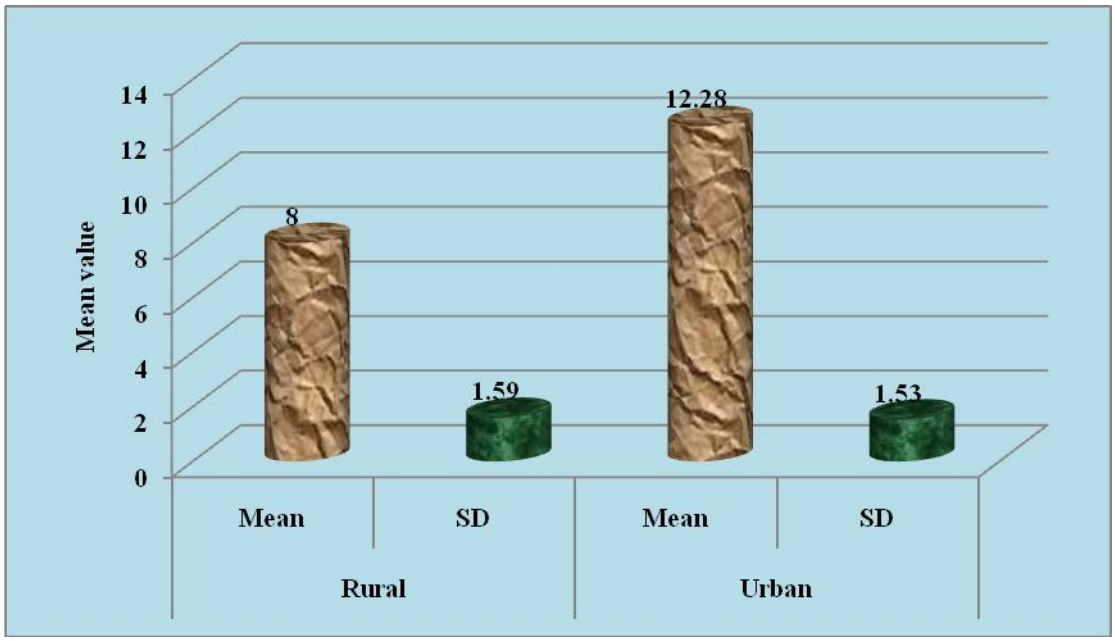

Figure -4.14: Mean and standard Deviation of Motor Development of urban and rural children

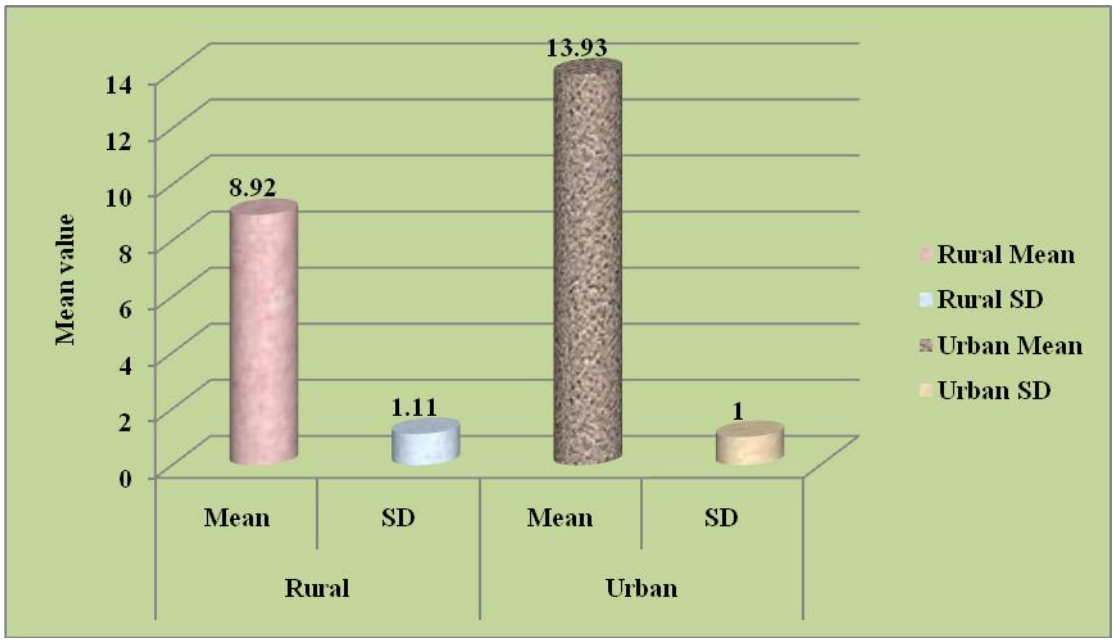

Figure -4.15: Mean and standard Deviation of Cognitive Development of urban and rural children.

Section G:

Association of physical growth of rural children with selected demographic variables

Table.4.11.a. Association of anthropometric measurements of urban preschool children with demographic variables such as age, gender, birth order of child, immunization status, occupation, and type of family. n=45

S. No	Demographic Variables Demographic data on Child	No	%	Level of Anthropometric Measurement				Chi-square
				Median (>5)		Median (≥5)		
				No	%	No	%	
1	Age of the child							1.8 df 2 N.S
	Three year old	15	33.3	4	8.9	11	24.4	
	Four year old	15	33.3	7	15.6	8	17.8	
	Five year old	15	33.3	4	8.9	11	24.4	
2	Gender of the child							
	Male	22	48.9	7	15.6	15	33.3	0.45 df 1 N.S
	Female	23	51.1	8	17.8	15	33.3	
3	Birth order of the child							
	One	14	31.1	3	6.7	11	24.4	5.99 df 2 S*
	Two	26	57.8	8	17.8	18	40.0	
	Three	5	11.1	4	8.9	1	2.2	
	Above three	0	0.0	0	0	0	0.0	
4	Immunization status							
	Primary (BCG, OPV, MMR, DPT)	4	8.9	1	2.2	3	6.7	4.82 df 3 N.S
	Primary &Boosters (OPV, DPT)	17	37.8	9	20.0	8	17.8	
	Any other (Hepatitis)	11	24.4	2	4.4	9	20.0	
	All of the above	13	28.9	3	6.7	10	22.2	
5	Occupation of father							
	Un employed	2	4.4	1	2.2	1	2.2	0.3 df 3 N.S
	Daily wages	14	31.1	5	11.1	9	20.0	
	Self employment	18	40.0	6	13.3	12	26.7	
	Govt. employed	11	24.4	3	6.7	8	17.8	
6	Type of Family							
	Nuclear	32	71.1	8	17.8	24	53.3	4.02 df 1 S*
	Joint	13	28.9	7	15.6	6	13.3	

S*= significant at 0.05 level NS= Non significant.

Table.4.11.b.Association of anthropometric measurements of urban preschool children with demographic variables such as religion, education of mother, education of father, income of family, total no. of children, and dietary pattern.n=45

Sl. No	Demographic Variables	No	%	Anthropometric Measurement				df	Chi-square
	Demographic data on family			Median (>5)		Median (≥5)			
				No	%	No	%		
1	Religion of the family								
	Hindu	20	45.4	7	15.56	13	33.33		
	Muslim	14	30.2	5	13.33	9	20	1	2.2NS
	Christian	11	24.4	1	4.44	10	24.44		
	Others	0	0	0	0	0	0		
2	Education of mother								
	Illiterate	6	13.33	2	4.44	4	8.89		
	Primary	13	28.89	5	11.11	8	17.78		
	Secondary	18	40	5	11.11	13	28.89	3	2.47NS
	Higher Secondary	7	15.56	2	4.44	5	11.11		
	Graduate	1	2.22	1	2.22	0	0		
3	Education of Father								
	Illiterate	3	6.67	1	2.22	2	4.44		
	Primary	10	22.22	4	8.89	6	13.33		
	Secondary	10	22.22	4	8.89	6	13.33	4	1.35NS
	Higher Secondary	14	31.11	3	6.67	11	24.44		
	Graduate	8	17.78	3	6.67	5	11.11		
4	Income of the family								
	Below 5000	3	6.67	2	4.44	1	2.22		
	5001 to 10,000	8	17.78	4	8.89	4	8.89	3	3.11NS
	10,001 to 15,000	13	28.89	3	6.67	10	22.22		
	Above 15,000	21	46.67	6	13.33	15	33.33		
5	Total no of children								
	One	14	31.11	5	11.11	9	20		
	Two	27	60	8	17.78	19	42.22	3	0.72NS
	Three	4	8.89	2	4.44	2	4.44		
	More than three	0	0	0	0	0	0		
6	Dietary pattern								
	Vegetarian	11	24.44	6	13.33	5	11.11	1	2.94NS
	Non vegetarian	34	75.56	9	20	25	55.56		

NS= Non significant.

The above tables 4.11.a and 4.11.b depicts the association between the Physical growth with selected demographic variables of urban preschool children such as age of the child, gender of the child, birth order of the child, immunization status, type of family, occupation, religion of the family, education of mother, education of father, income of the family, total no of children and dietary pattern with anthropometric measurements by using the chi-square test. The obtained chi-square value for anthropometric measurements shows significant association between birth order of the child and type of the family. The values obtained were 5.99 and 4.02 respectively at 0.05 levels. The other demographic variables did not show any significant association with anthropometrics measurements.

Table.4.12.a. Association of motor and cognitive development of urban preschool children with demographic variables such as age, gender, birth order of child, immunization status, occupation and type of family**.**

n=45

Sl. No	Demographic Variables / Demographic data on Child	No	%	Level of Development Measurement				Chi-square
				Median (>23)		Median (≥23)		
				No	%	No	%	
1	Age of the child							
	Three year old	15	33.33	6	13.33	9	20	2.04
	Four year old	15	33.33	7	15.56	8	17.78	
	Five year old	15	33.33	7	15.56	8	17.78	
2	Gender of the child							
	Male	22	48.89	11	24.44	11	24.44	0.97
	Female	23	51.11	9	20	14	31.11	
3	Birth order of the child							
	One	14	31.11	7	15.56	7	15.56	
	Two	26	57.78	11	24.44	15	33.33	0.71
	Three	5	11.11	2	4.44	3	6.67	
	Above three	0	0	0	0	0	0	
4	Immunization status							
	Primary (BCG, OPV, MMR, DPT)	4	8.89	1	2.22	3	6.67	
	Primary and Boosters (OPV, DPT)	17	37.78	11	24.44	6	13.33	1.68
	Any other (Hepatitis)	11	24.44	4	8.89	7	15.56	
	All of the above	13	28.89	4	8.89	9	20	
5	Occupation of father							
	Unemployment	2	4.44	2	4.44	0	0	
	Daily wages	14	31.11	7	15.56	7	15.56	2.3
	Self employment	18	40	6	13.33	12	26.67	
	Govt. employed	11	24.44	5	11.11	6	13.33	
6	Type of Family							
	Nuclear	32	71.11	16	35.56	16	35.56	1.38
	Joint	13	28.89	4	8.89	9	20	

Table. 4.12.b.Association of motor and cognitive development of urban preschool children with demographic variables such as religion, education of mother, education and dietary pattern.n=45

S. No	Demographic Variables Demographic data on family	No	%	Level of development Measurement Median (>23)		Median (≥23)		Chi-square
1	Religion of the family							
	Hindu	22	48.89	11	24.44	11	24.44	2.09
	Muslim	15	33.33	5	11.11	10	22.22	
	Christian	13	28.89	4	8.89	9	20	
	Others	0	0	0	0	0	0	
2	Education of mother							
	Illiterate	6	13.33	2	4.44	4	8.89	
	Primary	13	28.89	7	15.56	6	13.33	
	Secondary	18	40	7	15.56	11	24.44	2.25,
	Higher Secondary	7	15.56	3	6.67	4	8.89	
	Graduate	1	2.22	1	2.22	0	0	
3	Education of Father							
	Illiterate	3	6.67	1	2.22	2	4.44	
	Primary	10	22.22	5	11.11	5	11.11	
	Secondary	10	22.22	6	13.33	4	8.89	1.84
	Higher Secondary	14	31.11	5	11.11	9	20	
	Graduate	8	17.78	3	6.67	5	11.11	
4	Income of the family (per month)							
	Below 5000	3	6.67	2	4.44	1	2.22	0.88
	5001 to 10,000	8	17.78	4	8.89	4	8.89	
	10,001 to 15,000	13	28.89	5	11.11	8	17.78	
	Above 15,000	21	46.67	9	20	12	26.67	
5	Total no of children							
	One	14	31.11	7	15.56	7	15.56	
	Two	27	60	11	24.44	16	35.56	0.37
	Three	4	8.89	2	4.44	2	4.44	
	Above three	0	0	0	0	0	0	
6	Dietary pattern							
	Vegetarian	11	24.44	8	17.78	3	6.67	4.71
	Non vegetarian	34	75.56	12	26.67	22	48.89	

The above tables4.12.a and 4.12.b depicts the association between the growth and development with selected demographic variables of urban preschool children such as age of the child, gender of the child, birth order of the child, immunization status, type of family occupation, religion of the family, education of mother, education of father, income of the family, total no of children and dietary pattern with anthropometric measurements by using the chi-square test. The obtained chi-square value shows significant association between dietary patterns (4.71) and development measurements of urban children at 0.05 levels. The anthropometric measurements did not show any significant association with other demographic variables such as religions of the family education of mother, education of father, income of the family and total no of children

Table4.13.a. Association of physical growth of rural children with demographic variables such as age, gender, birth order of child, immunization status occupation, and type of family

n=45

S. No	Demographic Variables / Demographic data on Child	No	%	Level of Anthropometric Measurement				Chi-square
				Median (>4)		Median (≥4)		
				No	%	No	%	
1	Age of the child							
	Three year old	15	33.3	13	28.89	2	4.44	2.04
	Four year old	15	33.3	12	26.67	3	6.67	
	Five year old	15	33.3	12	26.67	3	6.67	
2	Gender of the child,							
	Male	22	48.9	18	40	4	8.89	0.97
	Female	23	51.1	19	42.22	4	8.89	
3	Birth order of the child,							0.71
	One	14	31.1	10	22.22	4	8.89	
	Two	26	57.8	24	53.33	2	4.44	
	Three	5	11.1	3	6.67	2	4.44	
	Above three	0	0	0	0	0	0	
4	Immunization status,							1.68
	Primary (BCG, OPV, MMR, DPT)	4	8.89	3	6.67	1	2.22	
	Primary and Boosters (OPV, DPT)	17	37.8	14	31.11	3	6.67	
	Any other (Hepatitis)	11	24.4	9	20	2	4.44	
	All of the above	13	28.9	11	24.44	2	4.44	
5	Occupation of father							60.14
	Unemployment	2	4.44	2	4.44	0	0	
	Daily wages	14	31.1	12	26.67	2	4.44	
	Self employment	18	40	15	33.33	3	6.67	
	Govt. employed	11	24.4	8	17.78	3	6.67	
6	Type of Family							2.11
	Nuclear	32	71.1	28	62.22	4	8.89	
	Joint	13	28.9	9	20	4	8.89	

Table 7.3.b. Association of physical growth of rural children with demographic variables such as religion of the family education of mother, education of father, income , total no of children and dietary pattern. **n=45**

Sl. No	Demographic Variables	No	%	Level of Anthropometric Measurement				Chi-square
				Median (>4)		Median (≥4)		
				No	%	No	%	
1	Religion of the family							
	Hindu	22	48.9	19	42.22	3	6.67	6.55*
	Muslim	15	33.3	10	22.22	5	11.11	
	Christian	13	28.9	8	17.78	5	11.11	
	Others	0	0	0	0	0	0	
2	Education of mother							
	Illiterate	6	13.3	4	8.89	2	4.44	1.53
	Primary	13	28.9	11	24.44	2	4.44	
	Secondary	18	40	15	33.33	3	6.67	
	Higher Secondary	7	15.6	6	13.33	1	2.22	
	Graduate	1	2.22	1	2.22	0	0	
3	Education of Father							
	Illiterate	3	6.67	2	4.44	1	2.22	1.34
	Primary	10	22.2	8	17.78	2	4.44	
	Secondary	10	22.2	9	20	1	2.22	
	Higher Secondary	14	31.1	12	26.67	2	4.44	
	Graduate	8	17.8	6	13.33	2	4.44	
4	Income of the family							
	Below 5000	3	6.67	2	4.44	1	2.22	2.15
	5001 to 10,000	8	17.8	7	15.56	1	2.22	
	10,001 to 15,000	13	28.9	9	20	4	8.89	
	Above 15,000	21	46.7	19	42.22	2	4.44	
5	Total no of children							
	One	14	31.1	12	26.67	2	4.44	3.12
	Two	27	60	23	51.11	4	8.89	
	Three	4	8.89	2	4.44	2	4.44	
	More than 3	0	0	0	0	0	0	
6	Dietary pattern							
	Vegetarian	11	24.4	8	17.78	3	6.67	0.89
	Non vegetarian	34	75.6	29	64.44	5	11.11	

The above tables 4.13.a and 4.13.b. depicts the association between the physical growth with selected demographic variables such as type of family occupation, immunization status, birth order of the child, gender of the child, age of the child, religion of the family, education of mother, education of father, income of the family, total no of children and dietary pattern with anthropometric measurements by using the chi-square test. The obtained chi-square value shows significant association between religions of the family (6.55) at 0.05 levels. The other demographic variables such as did not show any significant association education of mother, education of father, income of the family, total no of children and dietary pattern.

Table.7.4.a. Association of motor and cognitive development of rural preschool children with demographic variables such as age, gender, birth order of child, immunization status, occupation and type of family.

Sl. No	Demographic Variables / Demographic data on Child	No	%	Level of Development measurement				Chi-square
				Median (>20)		Median (≥20)		
				No	%	No	%	
1	Age of the child							
	Three year old	15	33.3	8	17.78	7	15.56	0.18
	Four year old	15	33.3	8	17.78	7	15.56	
	Five year old	15	33.3	9	20	6	13.33	
2	Gender of the child	25						
	Male	22	48.9	11	24.44	11	24.44	0.54
	Female	23	51.1	14	31.11	9	20	
3	Birth order of the child							
	One	14	31.1	9	20	5	11.11	2.58
	Two	26	57.8	12	26.67	14	31.11	
	Three	5	11.1	4	8.89	1	2.22	
	Above three	0	0	0	0	0	0	
4	Immunization status							
	Primary (BCG, OPV, MMR, DPT)	4	8.89	1	2.22	3	6.67	3.54
	Primary and Boosters (OPV, DPT)	17	37.8	12	26.67	5	11.11	
	Any other (Hepatitis)	11	24.4	6	13.33	5	11.11	
	All of the above	13	28.9	6	13.33	7	15.56	
5	Occupation of father							
	Unemployment	2	4.44	1	2.22	1	2.22	
	Daily wages	14	31.1	7	15.56	7	15.56	0.4
	Self employment	18	40	9	20	9	20	
6	Govt. employed	11	24.4	8	17.78	3	6.67	
	Type of Family							
	Nuclear	32	71.1	16	35.56	16	35.56	19.81***
	Joint	13	28.9	9	20	4	8.89	

Table.4.14.b. Association of motor and cognitive development of rural preschool children with demographic variables such as religion, education of mother, education of mother, income of family, total no. of children and dietary pattern.

Sl. No	Demographic Variables	No	%	Level of Development measurement				Chi-square
				Median (>20)		Median (≥20)		
				No	%	No	%	
1	Religion of the family							
	Hindu	22	48.9	13	28.89	9	20	3.37
	Muslim	15	33.3	8	17.78	7	15.56	
	Christian	13	28.9	4	8.89	9	20	
	Others	0	0	0	0	0	0	
2	Education of mother							
	Illiterate	6	13.3	3	6.67	3	6.67	3.33
	Primary	13	28.9	9	20	4	8.89	
	Secondary	18	40	8	17.78	10	22.22	
	Higher Secondary	7	15.6	4	8.89	3	6.67	
	Graduate	1	2.22	1	2.22	0	0	
3	Education of Father							
	Illiterate	3	6.67	2	4.44	1	2.22	2.44
	Primary	10	22.2	5	11.11	5	11.11	
	Secondary	10	22.2	7	15.56	3	6.67	
	Higher Secondary	14	31.1	6	13.33	8	17.78	
	Graduate	8	17.8	5	11.11	3	6.67	
4	Income of the family							
	Below 5000	3	6.67	2	4.44	1	2.22	0.48
	5001 to 10,000	8	17.8	5	11.11	3	6.67	
	10,001 to 15,000	13	28.9	8	17.78	5	11.11	
	Above 15,000	21	46.7	10	22.22	11	24.44	
5	Total no of children							
	One	14	31.1	8	17.78	6	13.33	0.78
	Two	27	60	14	31.11	13	28.89	
	Three	4	8.89	3	6.67	1	2.22	
	Above three	0	0	0	0	0	0	
6	Dietary pattern							
	Vegetarian	11	24.4	7	15.56	4	8.89	12.8***
	Non vegetarian	34	75.6	18	40	16	35.56	

The above tables 4.14.a and 4.14.b represents that the association between the development with selected demographic variables of urban preschool children such as age of the child, gender of the child, birth order of the child, immunization status, type of

family occupation, religion of the family, education of mother, education of father, income of the family, total no of children and dietary pattern with development measurements by using the chi-square test. The obtained chi-square value for development measurements shows significant association between types of family, for dietary pattern. The chi-square value obtained was 19.81 and 12.8 at 0.05 levels at 0.05 levels. The other demographic variables did not show any significant association with anthropometric measurements.

The obtained chi-square value shows significant association between religions of the family (6.55) at 0.05 levels. There was a significant association between types of family, and dietary pattern. The chi-square value obtained was 19.81 and 12.8 at 0.05 levels at 0.05 levels for rural preschool children.

CHAPTER V

DISCUSSION

This chapter deals with discussion part according to the results, obtained from statistical analysis based on the data of the study, the reviewed literature, hypothesis which was selected for the study. The purpose of the study is to assess different aspects of growth and development among 90 pre-school children of Anganwadies in selected urban and rural area at Coimbatore.

1. **The first objective is to assess the physical growth of pre-school children in selected urban and rural Anganwadies**.

The physical growth was assessed by the checklist of three years preschool children and the results were as follows, in urban preschool children, 11 (73.33%) were achieved the normal physical growth and 4 (26.67%) were not achieved the normal physical growth. In rural preschool children, 5 (33.33%) were achieved the normal physical growth and 10 (66.67%) were not achieved the normal physical growth.

The physical growth of four years children were, in urban preschool children 11 (73.33%) achieved the normal physical growth and 4 (26.67%) were not achieved the normal physical growth. In rural preschool children, 5 (33.33%) were achieved the normal physical growth and 10 (66.67%) were not achieved the normal physical growth.

The physical growth of five years children were as follows, among urban preschool children, 08 (53.33%) were achieved the normal physical growth and 7 (46.67%) were not achieved the normal physical growth. In rural preschool children, 08 (53.33%) were achieved the normal physical growth and 7 (46.67%) were not achieved the normal physical growth.

2. **The second objective is to assess the developmental milestones of pre-school children who are attending in rural and urban Anganwadies.**

With regard to motor development, the three years urban preschool children, 6 (40.00%) were achieved the motor development and 9 (60%) did not achieved the motor development. In rural preschool children, 15 (100%) of them did not achieved the motor development.

Among four years preschool children, among urban preschool children, 7 (46.67%) has achieved the motor development and 8 (53.33%) did not achieved the motor development. In rural preschool children, 2(13.33%) were achieved the normal motor development and 13 (86.67%) were not achieved the motor development.

Among five years preschool children, in urban preschool children, 3 (20.00%) had achieved the motor development and 12 (80.00%) did not achieved the motor development. In rural preschool children, 1 (6.67%) were achieved the normal motor development and 14 (93.33%) were not achieved the motor development.

The three years urban children, the urban preschool children, 1 (6.67%) were achieved the cognitive development and 14 (93.33%) have not achieved the cognitive development. In rural preschool children, 1 (6.67%) of them had achieved the cognitive development and 14 (93.33%) have not achieved the cognitive development.

Among four years preschool children, the urban preschool children, 2 (13.33%) had achieved the cognitive development and 13 (86.67%) did not achieved the cognitive development. In rural preschool children, 1 (6.67%) were achieved the normal cognitive development and 14 (93.33%) were not achieved the cognitive development.

Among five years preschool children, the urban preschool children, 5 (33.33%) had achieved the cognitive development and 10 (66.67%) did not achieved the

cognitive development. In rural preschool children, 2 (13.33%) were achieved the normal cognitive development and 13 (86.67%) were not achieved the cognitive development.

3. **The third objective was to compare the selected aspects of growth &development of pre-school children who are attending in rural and urban Anganwadies.**

The comparison of urban and rural preschool children physical growth or anthropometrics measurement are as follows, the Mean, SD, Percentile and Mean Percentage of urban preschool children are 4.67, 0.47, 80% and 93.40% respectively.

The Mean Percentage value of urban is 93.40 where as for rural it is 84.40. The Mean, SD, Percentile and Mean Percentage of rural preschool children were 4.22, 0.73, 60% and 84.40% respectively. Thus it indicates that the mean percentage was higher in the urban children.

The Mean and SD of urban and rural preschool children's motor development of urban were 8, and 1.59 respectively. In rural the mean and standard deviation was 12.28 and 1.53 respectively.

The Mean and SD of urban and rural preschool children's cognitive development of urban were 13.93, and 1respectively. In rural, the Mean and SD was 8.92, and 1.11 respectively.

The paired t-test was carried out to compare the selected aspects of growth and development of urban and rural preschool children and the value obtained for growth was 2.02 and was found significant at 0.05 levels. The paired t-test was calculated for comparison of motor development of preschool children and the calculated value is 9.68 for the cognitive development the paired t-test value is 1.02 and shows significant at 0.05 levels.

4. **The fourth objective was to associate the finding of growth and development with selected demographic variables of rural and urban preschool children.**

The forth objective was to associate the finding of growth and development with selected demographic variables of rural and urban preschool children.

There was a statistically significant association found between birth order of child and type of family with anthropometrics measurements of preschool children at $p<0.05$ level in selected urban Anganwadies.

There was statistically significant association found between type of children and dietary pattern of families with developmental measurements of preschool children at $p<0.05$ levels in selected urban Anganwadies.

There was a statistically significant association found between religion of the family with anthropometrics measurements of preschool children at $p< 0.05$ level in selected rural Anganwadies.

There was statistically significant association found between type of children and dietary pattern of families with developmental measurements of preschool children at $p<0.05$ levels in selected rural Anganwadies.

A report showed that the scientific evidence to support a link between physical activity and biological and psychosocial development during early childhood (ages two to five years). The pertinent literature informing the nature of the physical activity required promoting healthy physical, cognitive, emotional, and social development during these early years. A particular focus is on the interaction between physical activity and motor skill acquisition. Special emphasis is also placed on the nature of physical activity that promotes healthy weight gain during this period of childhood. The paper also discusses the strongest determinants of physical activity in preschool-age children, including the role of the child's environment (e.g., family, child-

care, and socio-economic status). We provide recommendations for physical activity based on the best available evidence, and identify future research needs.

Testing of hypothesis:

H_1: There is a significant difference in different aspect of growth and development among preschool children of Anganwadies in selected urban and rural areas.

The obtained paired t-test value for assessing the anthropometrics measurement between urban and rural was 2.02 and was significant at 0.05 levels. The paired t test value of motor development for urban and rural was 9.68 and is significant at 0.05 levels. The paired t test value of cognitive development of urban and rural was 1.02 and is significant at 0.05 levels.

H_2: There is a significant association between different aspects of growth and development among preschool children of Anganwadies in urban and rural with selected demographic variables.

The obtained chi-square values for anthropometrics measurements and selected demographic variables, such as religion of the family in rural was found associated. For developmental measurement in rural the demographic variables were associated such as type of family and dietary pattern.

In urban, the demographic variables associated with the anthropometrics measurements are birth order of child and type of family and for developmental dietary patterns of families of urban preschool children in selected Anganwadies was found associated.

CHAPTER – VI

SUMMARY AND RECOMMENDATIONS

Children are invaluable human assets. It is state's responsibility to protect the rights of the children and provide equitable chances to them for development. In India, scheme of ICDS is considered the single largest program to provide the basis services to children from the deprived section of society. It aims for a better starts in life by providing nutrition, health education in addition to providing many other services.

In India, poverty, population explosion, low female literacy and environmental degradation, protein energy malnutrition contributes to majority of preschooler mortality or abnormal development. Nutrition affects the physical dimensions of the body, particularly in the rapidly growing period of early childhood. The present study was carried out to investigate the physical growth and development status of urban and rural preschool children with special attention to nutrition status in terms of anthropometrics measurements.

Objectives

1. To assess the physical growth of pre-school children of urban and rural Anganwadies.
2. To assess the developmental milestones of pre-school children of rural and urban Anganwadies.
3. To compare the selected aspects of growth & development of pre-school children in rural and urban Anganwadies.
4. To associate the finding of growth and development with selected demographic variables of rural and urban preschool children.

Hypotheses

H_1: There is a significant difference in different aspect of growth and development among preschool children of Anganwadies selected urban and rural areas.

H_2: There is a significant association between different aspects of growth and development among preschool children of Anganwadies in urban and rural areas with selected demographic variables.

The conceptual frame of the study was based on Becker's (1974) health belief model. It is provided to be an excellent framework for the utilization of health care for children. The major components of health belief model are perceived susceptibility, Likelihood of action and modifying factors. The parents were taken into consideration since children's were not able to make appropriate decision and are directly influence on the health status of the children.

The study uses an observational survey approach. The population in the study consisted of preschool children of selected urban and rural Anganwadies centres selected by cluster sampling technique based on certain predetermined criteria.

A structured interview schedule was used to collect the data pertaining to personal characteristics and observational checklist was used to assess the physical growth and development. Content validity by experts and reliability of the tool was established by the inter rater method. The pilot study was conducted in Anganwadies Coimbatore . The obtained data were analyzed in terms of objectives and hypothesis using descriptive and inferential statistics. The level of significance of the testing of hypothesis was set at level.

The Sample Characteristics

- The all age groups are belongs to the equal percentage i.e. 33.33% in urban and rural.
- Majority 51.11% were female. In rural, 68.89% were belongs to female.
- Maximum of 57.78% were belongs to 2nd birth order of urban. In rural 40% were2nd order.
- Higher 37% were had primary and booster doses in urban. Where as in rural, 40% had primary and booster doses.
- In occupation 40% were self employed. In rural 57.78% were working on daily wages.
- In relation to type of family, 71.11% were belongs to nuclear family of urban people. In rural 53.33% belongs to joint family.
- 48.89% of urban people fall in Hindu religion. Where as in rural 66.66% was Hindu.
- In relation to education of urban mother, 40% were had secondary education. Whereas 42.22% had primary education in rural.
- Education of father in urban, 31.11% were higher secondary education, in rural 31.11 were having secondary education
- With regard to income of the family of urban, 46.67% have above 15000 rupees per month income. In rural 48.89% have 5001to 10000 rupees per month.
- 60% of urban family consists of 2 children. Where as in rural 37.78% consists of 3 children in the family.
- 75.56% of urban people were non-vegetarians and in rural 64.44% were non-vegetarians.

Physical Growth of Preschool Children

The three years preschool children, 11 (73.33%) the urban preschool children achieved the normal physical growth and 4 (26.67%) were not achieved the normal physical growth. In rural, 5(33.33%) were achieved the normal physical growth and 10 (66.67%) were not achieved the normal physical growth. 11(73.33%) of four year urban preschool children achieved the normal physical growth and 4 (26.67%) were not achieved the normal physical growth. In rural, 5 (33.33%) were achieved the normal physical growth and 10(66.67%) were not achieved the normal physical growth. From five years urban preschool children, 08(53.33%) were achieved the normal physical growth and 7(46.67%) were not achieved the normal physical growth. In rural, 08(53.33%) were achieved the normal physical growth and 7(46.67%) were not achieved the normal physical growth.

Motor and Cognitive Development:

Considering the motor and cognitive development of preschool children in Anganwadies of urban and rural, 29 (64.44%) of children from urban were not achieved the normal motor development and 16 (35.55%) were achieved the normal motor development. In rural 42 (93.33%) were not achieved the normal motor development and 03 (06.66%) were achieved the normal motor development. From urban 37 (82.225) were not achieved the normal cognitive development and 08 (17.77%) were achieved the normal cognitive development. In rural 41 (91.11%) were not achieved the normal cognitive development and 04 (08.88%) were achieved the normal cognitive development. There was a significant association between anthropometrics measurements and birth order of the child and type of the family. The values obtained are 5.99 and 4.02 respectively at 0.05 levels, of urban preschool children. There was significant association between dietary patterns (4.71) and measurements development of urban children at 0.05 levels.

The obtained chi-square value shows significant association between anthropometrics measurements and religions of the family (6.55) at 0.05 levels. There was a significant association between types of family and for dietary pattern with development measures. The chi-square value obtained was 19.81and 12.8 at 0.05 levels at 0.05 levels for rural preschool children.

Conclusion

The present study assessed the physical growth and development of preschool anganwadies children of urban and rural areas. The following conclusions were drawn based on the following findings**.**

The three years preschool children, 11 (73.33%) the urban preschool children achieved the normal physical growth and 4 (26.67%) were not achieved the normal physical growth. In rural, 5(33.33%) were achieved the normal physical growth and 10(66.67%) were not achieved the normal physical growth. 11 (73.33%) of four year urban preschool children achieved the normal physical growth and 4 (26.67%) were not achieved the normal physical growth. In rural, 5 (33.33%) were achieved the normal physical growth and 10 (66.67%) were not achieved the normal physical growth. From five years urban preschool children, 08 (53.33%) were achieved the normal physical growth and 7 (46.67%) were not achieved the normal physical growth. In rural, 08 (53.33%) were achieved the normal physical growth and 7 (46.67%) were not achieved the normal physical growth.

Considering the motor development of preschool children in anganwadies of urban and rural, 29 (64.44%) of children from urban did not achieved the normal motor development and 16 (35.55%) were achieved the normal motor development. In rural 42 (93.33%) were not achieved the normal motor development and 03 (06.66%) were achieved the normal motor development. From 45children from urban, 37 (82.225) were not achieved the normal cognitive development and 08 (17.77%) were achieved the normal cognitive development. In rural among 45 preschool children, 41 (91.11%) were

not achieved the normal cognitive development and 04 (08.88%) were achieved the normal cognitive development.

Implications of the Study

The finding of the study has implications for nursing service, nursing education, nursing administration and nursing research.

Nursing Administration

An implication to nursing administration includes:

- Organizing the special under five clinics for preschoolers.
- The counselling centres and education centres should be established to educate the parents regarding normal growth and developmental milestones.
- The parent's should be educated for nutrition and assessment of malnutrition.
- Mothers should be encouraged to take decisions for their children's health checkups.
- The paediatric or community health nurse should monitor nutritional status of anganwadies children.
- Establishment of under five clinics and encourage the parents to participate and seek help for these clinics.
- Participate in the ICDS (Integrated Child Developmental Services) programs.

Nursing Practice:

An implication to nursing practice includes:

- Assessing the nutritional status of preschool children of anganwadies.
- Assessing the physical growth and development of preschool children of anganwadies.

- Educating the mothers for monitoring the achievement of milestones.
- Educating the mothers for good nutritional diet.
- Encourage for periodical health checkups for the children's.
- Participating in the national health programs for children.
- Educate the parents to utilize the existing health care facilities and social support system.

Nursing Education

The nursing curriculum should emphasize on the sub specialty in paediatrics who render knowledge for students on normal growth and development of children on each systematic disorder, knowledge of growth and development essential to determine whether child is healthy, mentally alert and well adjusted to the environment or not. To teach mothers, a special focus to the parents the procedure for observing their children optimal growth and development.

Nursing Research

Implication for nursing research include replicating the study in other geographic areas that also represent a diverse sample of preschool children from wider range of age, economic status, mothers knowledge.

Suggestions

- Visits to anganwadies centres and health appraisal of preschool children can be part of curriculum, to compare urban and rural where community and paediatric nurse can be able understand the factors influencing the normal growth and development.
- Mothers can be educated for the normal growth and development and delay in the development and early identification of the developmental problems. This can be done through the role play.

- Health education classes can be conducted in the OPD/ in community health centres.

Recommendations

- Similar study can be conducted in a large scale for generalization among preschool children.
- A study can be conducted to assess physical growth and development and factors influencing the normal growth and development of preschool children.
- A comparative study should be done in schools for urban and rural children on other area of growth and development such as language development, moral development etc.
- Similar study can be conducted to assess the physical growth and factors influencing on them.

Limitations

- The study findings are limited to only those children who attend selected Anganwadies centres of urban and rural community.
- The investigator has to undergo many legal procedures to get permission for conducting the data collection in particular urban and rural Anganwadies.
- Study period was limited to four weeks.

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APPENDIX – V

INSTRUCTION

Good Morning/Afternoon,

I am Mrs. Geethu.G, post graduate student from Ellen College of nursing, Coimbatore conducting "A study on comparing different aspects of growth and development among pre-school children of anganwadies in selected urban and rural area at Coimbatore district"

I request you to participate in this study by giving your valuable answers to the questions being asked. Your responses will be kept confidential and used only for the intended purpose.

SECTION A

DEMOGRAPHIC DATA

SELF ADMINISTERED QUESTIONNAIRE REGARDING DEMOGRAPHIC VARIABLES

Instructions to the participants:

Please complete the following by placing the right option code in appropriate box[ ] provided against each item.

Demographic data of child

1. Age of child in years
   a) 3 [ ]
   b) 4 [ ]
   c) 5 [ ]

2. Gender of the child
   a) Male [ ]
   b) Female [ ]

3. Birth order of the child
   a) One [ ]
   b) Two [ ]
   c) Three [ ]
   d) Above three [ ]

4. Immunization status
   a) Primary (BCG, OPV, MMR, DPT) [ ]
   b) Primary and Boosters (OPV, DPT) [ ]
   c) Any other (Hepatitis) [ ]
   d) All of the above [ ]

Demographic data on family

5. Occupation of father
    a) Unemployment [ ]
    b) Daily wages [ ]
    c) Self employment [ ]
    d) Govt. employed [ ]

6. Type of family
    a. Nuclear [ ]
    b. Joint [ ]

7. Religion of the family
    c. Christian [ ]
    d. Hindu [ ]
    e. Muslim [ ]
    f. Others [ ]

8. Education of the mother
    a. Illiterate [ ]
    b. Higher secondary [ ]
    c. Graduate [ ]
    d. Post graduate [ ]

9. Education of the mother
    a. Illiterate [ ]
    b. Higher secondary [ ]
    c. Graduate [ ]
    d. Post graduate [ ]

10. Income of family
    a. Below 5000 [ ]
    b. 5001 to 10,000 [ ]
    c. 10,001 to 15,000 [ ]
    d. Above 15001 [ ]

11. Total no of children in family

a. One [ ]
b. Two [ ]
c. Three [ ]
d. More than three [ ]

12. Dietary pattern
a. Vegetarian [ ]
b. Non vegetarian]

SECTION B

ASSESSMENT OF PHYSICAL GROWTH OF URBAN AND RURAL PRESCHOOL CHILDREN :-

Name of the child	Height in (cms)	Weight in (kg)	MAC (cms)	CC (cms)	HC(cms)

ASSESSMENT OF MOTOR DEVELOPMENT OF URBAN AND RURAL PRESCHOOL CHILDREN :-

SINO	ACTION	introduced	progress	mastery
	AGE 3			
1	Catches a ball with both hands against the chest			
2	Rides a tricycle			
3	Hops on both feet several times without assistance			
4	Throws a ball five feet with accuracy			
5	Climbs up a slide and comes down			
	AGE 4			
1	Balance on one foot			
2	Walks a straight line forward and backward			
3	Rides tricycle with speed and skill			
4	Climbs steps with alternate feet without support			
5	Throw, catches and bounces a large ball			
	AGE 5			
1	Catches and throws a small ball			
2	Skips rope			
3	Descends stairs by alternating feet			
4	Hops on one foot			
5	Skips on either foot			

ASSESSMENT OF COGNITIVE DEVELOPMENT OF URBAN AND RURAL PRESCHOOL CHILDREN :-

SI.NO	ACTION	
1	Know their full name,age,gender	
2	Identify and name basic colours	
3	Say the alphabet	
4	Build a tower with four or more blocks	
5	Understand the time better (morning, evening, ,night)	
6	Knows the telephone number of the parent	
1	Write some capital letters	
8	Laugh at silly ideas	
9	Pay attention for about 3 minutes	
10	Remember parts of story	

PART I- DEMOGRAPHIC VARIABLES

Sl. No	ITEMS	RELEVANT	NEEDS MODIFICATION	NOT RELEVANT	REMARKS
1.					
2.					
3.					
4.					
5.					
6.					
7					
8.					
9.					
10.					
11.					
12.					

SECTION B

ASSESSMENT OF PHYSICAL GROWTH OF URBAN AND RURAL PRESCHOOL CHILDREN :-

Sl.No	ITEMS	RELEVANT	NEEDS MODIFICATION	NOT RELEVANT	REMARKS
1					
2					
3					
4					
5					

ASSESSMENT OF MOTOR DEVELOPMENT OF URBAN AND RURAL PRESCHOOL CHILDREN :-

Sl.No	ITEMS	RELEVANT	NEEDS MODIFICATION	NOT RELEVANT	REMARKS
1.					
2.					
3.					

4.					
5.					
6					
7.					
8					
9.					
10.					
11					
12					
13					
14					
15					

ASSESSMENT OF COGNITIVE DEVELOPMENT OF URBAN AND RURAL PRESCHOOL CHILDREN :

Sl. No	ITEMS	RELEVANT	NEEDS MODIFICATION	NOT RELEVANT	REMARKS
1.					
2.					
3.					
4.					
5.					
6.					
7					
8.					
9.					
10.					